A STORMWATER MANAGEMENT ANALYSIS

OF THE PROPOSED DEVELOPMENT OF

CHILDREN'S LIGHTHOUSE CHILDCARE CENTER

IN

City of O'Fallon, Missouri

FOR

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BAX PROJECT NO. 03-12478E

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Introduction

This report analyzes the effects of the proposed commercial development, on a 4.97 acres tract of land within the City of O'Fallon at the location; the site resides east of the intersection of Sommers Road and Highway DD.

One proposed detention facility provides the Stormwater Attenuation required by the City of O'Fallon Design Standards. Comparing the predeveloped conditions and the postdeveloped conditions identifies Drainage Area I requires stormwater detention. Examining the storage volume and outflow rates ensures the peak rate of runoff leaving the tract under postdeveloped conditions doesn't exceed the predeveloped peak rate of runoff for the 2 year, 15 Year, 25 year, and 100 Year 20 Minute design storms. The 100 year 20 Minute design storm low flow blocked (LFB) model and analysis ensures safe passage.

Two water quality snouts provide water quality for Drainage Area I; this BMP provides the storage required by product manufacturer.

General Site Data

Table 1: P.I. Factor Values displays the runoff factors used for all rational method calculations.

Table 1: P.I. Factor Values

Cover	% Impervious	P.I. (cfs/ac)			
		2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Greenspace	5%	1.15	1.70	2.00	2.29
46% Impervious	46%	1.68	2.50	2.94	3.37
90% Impervious	90%	2.26	3.36	3.94	4.53
Building/Pavement	100%	2.39	3.54	4.16	4.77
Basin Surface	100%	2.39	3.54	4.16	4.77

Appendix A contains a soil map from the United States Department of Agriculture (USDA). The soils map determines the proportionate soil group. The entire site is proportionate to hydraulic soil group “D.”

CURRENT Flood Protection

CURRENT Differential Runoff Calculations

Analyzing the site's drainage areas in the predeveloped and CURRENT postdeveloped conditions aids in determining the detention requirement; see Appendix E for the drainage area maps. The CURRENT differential runoff equals the CURRENT postdeveloped runoff minus the predeveloped runoff. A positive differential runoff requires stormwater detention within that watershed.

Drainage Area I conveys flow southwest. *Table 2: CURRENT Differential Runoff Calculations – Drainage Area I* calculates a positive differential runoff value; this drainage area requires detention. One bioretention basin provides required detention for the CURRENT condition.

Table 2: CURRENT Differential Runoff Calculations – Drainage Area I

Predevelopment: Drainage Area I						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	4.83	5.55	8.21	9.66	11.06
	Total =	4.83	5.55	8.21	9.66	11.06
Postdevelopment: Drainage Area I						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	2.90	3.34	4.93	5.80	6.64
	Building/Pavement	1.42	3.39	5.03	5.91	6.77
	Basin Surface	0.53	1.27	1.88	2.20	2.53
	Total =	4.85	8.00	11.84	13.91	15.94
	Differential Runoff =		2.45	3.63	4.25	4.88

Drainage Area I requires Detention.

Drainage Area II conveys flow east. *Table 3: CURRENT Differential Runoff Calculations – Drainage Area II* calculates zero differential runoff value; this drainage area does not require detention.

Table 3: CURRENT Differential Runoff Calculations – Drainage Area II

Predevelopment: Drainage Area II						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	0.14	0.16	0.24	0.28	0.32
	Total =	0.14	0.16	0.24	0.28	0.32
Postdevelopment: Drainage Area II						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	0.14	0.16	0.24	0.28	0.32
	Total =	0.14	0.16	0.24	0.28	0.32
	Differential Runoff =		0.00	0.00	0.00	0.00

Drainage Area II does not require Detention.

CURRENT Detention Calculations: Drainage Area I

The Bioretention Basin within Drainage Area I releases postdeveloped flow at an allowable rate. For this analysis a computer hydraulic modeling program, Pondpack, models the site in the predeveloped and postdeveloped conditions; refer to Appendix C for calculations. The predeveloped and postdeveloped 2 Year, 15 Year, 25 Year, and 100 Year 20 Minute design storm comparison ensures proposed conditions meet allowable release rates. The postdeveloped 100 Year 20 Minute – Low Flow Blocked (LFB) conditions confirms allowable freeboard and water fluctuation.

Two subdrainage areas make up Drainage Area I; Basin Inflow & Direct Runoff. *Table 4: CURRENT Rational Method Basin Inflow – Drainage Area I* and *Table 5: CURRENT Rational Method Direct Runoff – Drainage Area I* displays the rational method calculations for all subdrainage areas.

Table 4: CURRENT Rational Method Basin Inflow – Drainage Area I

Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	2.57	2.96	4.37	5.14	5.89
	Building/Pavement	1.30	3.11	4.60	5.41	6.20
	Basin Surface	0.53	1.27	1.88	2.20	2.53
Offsite	46% Impervious	1.55	2.60	3.88	4.56	5.22
	Building/Pavement	0.02	0.05	0.07	0.08	0.10
Total =		5.97	9.99	14.80	17.39	19.94

Table 5: CURRENT Rational Method Direct Runoff – Drainage Area I

Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	0.33	0.38	0.56	0.66	0.76
	Building/Pavement	0.12	0.29	0.42	0.50	0.57
Offsite	Greenspace	0.35	0.40	0.60	0.70	0.80
	Building/Pavement	0.72	1.72	2.55	3.00	3.43
Total =		1.52	2.79	4.13	4.86	5.56

CURRENT Allowable Release Rate – Drainage Area I

Allowable Release Rate is defined as the maximum amount of stormwater that can be released form the proposed basin in any given storm duration. *Table 6: CURRENT Allowable Release Rate – Drainage Area I* determines the allowable release rate form the Bioretention Basin by subtracting the differential runoff from the basin inflow; this ensures the postdeveloped flow is less than or equal to the predeveloped flow.

Table 6: CURRENT Allowable Release Rate – Drainage Area I

Storm Frequency	Basin Inflow (cfs)	Differential Runoff (cfs)	Allowable Release Rate (cfs)
2 Yr 20 Min	9.99	2.45	7.54
15 Yr 20 Min	14.80	3.63	11.17
25 Yr 20 Min	17.39	4.25	13.14
100 Yr 20 Min	19.94	4.88	15.06

CURRENT Pondpack Routing – Drainage Area I

The Bioretention Basin provides the required detention for Drainage Area I. The computer program, Pondpack, routes the 2 Year, 15 Year, 25 Year, and 100 Year 20 Minute design storms. The 100 Year 20 Minute design storm Low Flow Blocked (LFB) model and analysis ensures safe passage.

Due to the undersized storm sewer system downstream of the bioretention basin, flows are released at a reduced rate. The Bioretention Basin was sized to over-detain this flow to prevent further problems downstream.

Appendix B displays the Pondpack Input, Basin Volume. Appendix B also displays the Time of concentration. The CURRENT Condition hydrographs use a time of concentration of 5 minutes applied to the CURRENT Basin Inflow – Drainage Area I.

Table 7: CURRENT Pondpack Storm Routing – Drainage Area I ensures CURRENT condition detention meets requirements. The postdeveloped flow rate combines the basin release rate and direct runoff rate.

Table 7: CURRENT Pondpack Storm Routing – Drainage Area I

Storm Frequency	Peak Inflow (cfs)	Allowable Release Rate (cfs)	Calculated Release Rate (cfs)	Peak Elevation (ft)	Water Fluctuation (ft)	Freeboard (ft)
2 Yr 20 Min	9.99	7.54	0.06	592.80	1.30	3.70
15 Yr 20 Min	14.80	11.17	0.10	593.15	1.65	3.35
25 Yr 20 Min	17.39	13.14	0.10	593.33	1.83	3.17
100 Yr 20 Min	19.94	15.06	0.11	593.51	2.01	2.99
100 Yr 20 Min (LFB)	19.94	NA	18.01	595.37	3.87	1.13

CURRENT Summary of Drainage Area I

Outlet Point: Drainage Area I

2 Year, 20 Min Predeveloped Discharge	5.55	cfs
2 Year, 20 Minute Postdeveloped Discharge	2.85	cfs

✓ 2 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

15 Year, 20 Minute Predeveloped Discharge	8.21	cfs
15 Year, 20 Minute Postdeveloped Discharge	4.23	cfs

✓ 15 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

25 Year, 20 Minute Predeveloped Discharge	9.66	cfs
25 Year, 20 Minute Postdeveloped Discharge	4.96	cfs

✓ 25 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

100 Year, 20 Minute Predeveloped Discharge	11.06	cfs
100 Year, 20 Minute Postdeveloped Discharge	5.67	cfs

✓ 100 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

Bioretention Basin	Discharge Rate	High Water
2 Year, 20 Minute Storm	0.06 cfs	592.80
15 Year, 20 Minute Storm	0.10 cfs	593.15
25 Year, 20 Minute Storm	0.10 cfs	593.33
100 Year, 20 Minute Storm	0.11 cfs	593.51
100 Year, 20 Minute Storm LFB	18.01 cfs	595.37

Bioretention Basin Details

*See Details for Underdrain Information

Low Flow Slot	1.5 in Circular Orifice
Low Flow Slot Elevation	592.75
Structure Type	48 inch Standpipe
Crest Elevation	594.90
Top of Bioretention Basin Berm	596.50
Freeboard (ft)	1.13

✓ Bioretention Basin meets Freeboard Requirements ✓

Water Fluctuation (ft)	3.87

✓ Bioretention Basin meets Water Fluctuation Requirements ✓

FUTURE Flood Protection

FUTURE Differential Runoff Calculations

Analyzing the site's drainage areas in the predeveloped and FUTURE postdeveloped conditions aids in determining the detention requirement; see Appendix E for the drainage area maps. The FUTURE Differential Runoff equals the FUTURE Postdeveloped Runoff minus the Predeveloped Runoff. A positive differential runoff requires stormwater detention within that drainage area.

Drainage Area I conveys flow southwest. *Table 8: FUTURE Differential Runoff Calculations – Drainage Area I* calculates a positive differential runoff value; this drainage area requires detention. One bioretention basin provides required detention for the FUTURE condition.

Table 8: FUTURE Differential Runoff Calculations – Drainage Area I

Predevelopment: Drainage Area I						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	4.83	5.55	8.21	9.66	11.06
	Total =	4.83	5.55	8.21	9.66	11.06
Postdevelopment: Drainage Area I						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	1.74	2.00	2.96	3.48	3.98
	90% Impervious	1.16	2.62	3.90	4.57	5.25
	Building/Pavement	1.42	3.39	5.03	5.91	6.77
	Basin Surface	0.53	1.27	1.88	2.20	2.53
	Total =	4.85	9.28	13.77	16.16	18.53
	Differential Runoff =		3.73	5.56	6.50	7.47

Drainage Area I requires Detention.

Drainage Area II conveys flow east. *Table 9: FUTURE Differential Runoff Calculations – Drainage Area II* calculates zero differential runoff value; this drainage area does not require detention.

Table 9: FUTURE Differential Runoff Calculations – Drainage Area II

Predevelopment: Drainage Area II						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	0.14	0.16	0.24	0.28	0.32
	Total =	0.14	0.16	0.24	0.28	0.32
Postdevelopment: Drainage Area II						
Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	0.14	0.16	0.24	0.28	0.32
	Total =	0.14	0.16	0.24	0.28	0.32
	Differential Runoff =		0.00	0.00	0.00	0.00

Drainage Area II does not require Detention.

FUTURE Detention Calculations: Drainage Area I

Two subdrainage areas make up Drainage Area I; Basin Inflow & Direct Runoff. *Table 10: FUTURE Rational Method Basin Inflow – Drainage Area I* and *Table 11: FUTURE Rational Method Direct Runoff – Drainage Area I* displays the rational method calculations for all subdrainage areas.

Table 10: FUTURE Rational Method Basin Inflow – Drainage Area I

Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	1.41	1.62	2.40	2.82	3.23
	90% Impervious	1.16	2.62	3.90	4.57	5.25
	Building/Pavement	1.30	3.11	4.60	5.41	6.20
	Basin Surface	0.53	1.27	1.88	2.20	2.53
Offsite	46% Impervious	1.55	2.60	3.88	4.56	5.22
	Building/Pavement	0.02	0.05	0.07	0.08	0.10
Total =		5.97	11.27	16.73	19.64	22.53

Table 11: FUTURE Rational Method Direct Runoff – Drainage Area I

Onsite/ Offsite	Cover	Area (acres)	P.I. (cfs/ac)			
			2 Yr 20 Min	15 Yr 20 Min	25 Yr 20 Min	100 Yr 20 Min
Onsite	Greenspace	0.33	0.38	0.56	0.66	0.76
	Building/Pavement	0.12	0.29	0.42	0.50	0.57
Offsite	Greenspace	0.35	0.40	0.60	0.70	0.80
	Building/Pavement	0.72	1.72	2.55	3.00	3.43
Total =		1.52	2.79	4.13	4.86	5.56

FUTURE Allowable Release Rate – Drainage Area I

Allowable Release Rate is defined as the maximum amount of stormwater that can be released form the proposed basin in any given storm duration. *Table 12: FUTURE Allowable Release Rate – Drainage Area I* determines the allowable release rate form the Bioretention Basin by subtracting the differential runoff from the basin inflow; this ensures the postdeveloped flow is less than or equal to the predeveloped flow.

Table 12: FUTURE Allowable Release Rate – Drainage Area I

Storm Frequency	Basin Inflow (cfs)	Differential Runoff (cfs)	Allowable Release Rate (cfs)
2 Yr 20 Min	11.27	3.73	7.54
15 Yr 20 Min	16.73	5.56	11.17
25 Yr 20 Min	19.64	6.50	13.14
100 Yr 20 Min	22.53	7.47	15.06

FUTURE Pondpack Routing – Drainage Area I

The Bioretention Basin provides the required detention for Drainage Area I. The computer program, Pondpack, routes the 2 Year, 15 Year, 25 Year, and 100 Year 20 Minute design storms. The 100 Year 20 Minute design storm Low Flow Blocked (LFB) model and analysis ensures safe passage.

The flow released from the Bioretention Basin is reduced due to the undersized storm sewer system downstream of the basin. The Bioretention Basin was sized to overdetain this flow to prevent further problems downstream.

Appendix B displays the Pondpack Input, Basin Volume. Appendix B also displays the Time of concentration. The FUTURE Condition hydrographs use a time of concentration of 5 minutes applied to the FUTURE Basin Inflow – Drainage Area I.

Table 13: FUTURE Pondpack Storm Routing – Drainage Area I ensures FUTURE condition detention meets requirements. The postdeveloped flow rate combines the basin release rate and direct runoff rate.

Table 13: FUTURE Pondpack Storm Routing – Drainage Area I

Storm Frequency	Peak Inflow (cfs)	Allowable Release Rate (cfs)	Calculated Release Rate (cfs)	Peak Elevation (ft)	Water Fluctuation (ft)	Freeboard (ft)
2 Yr 20 Min	11.27	7.54	0.08	592.90	1.40	3.60
15 Yr 20 Min	16.73	11.17	0.10	593.29	1.79	3.21
25 Yr 20 Min	19.64	13.14	0.11	593.49	1.99	3.01
100 Yr 20 Min	22.53	15.06	0.12	593.68	2.18	2.82
100 Yr 20 Min (LFB)	22.53	NA	20.58	595.41	3.91	1.09

FUTURE Summary of Drainage Area I

Outlet Point: Drainage Area I

2 Year, 20 Min Predeveloped Discharge	5.55	cfs
2 Year, 20 Minute Postdeveloped Discharge	2.87	cfs

✓ 2 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

15 Year, 20 Minute Predeveloped Discharge	8.21	cfs
15 Year, 20 Minute Postdeveloped Discharge	4.23	cfs

✓ 15 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

25 Year, 20 Minute Predeveloped Discharge	9.66	cfs
25 Year, 20 Minute Postdeveloped Discharge	4.97	cfs

✓ 25 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

100 Year, 20 Minute Predeveloped Discharge	11.06	cfs
100 Year, 20 Minute Postdeveloped Discharge	5.68	cfs

✓ 100 Year, 20 Minute Detention Requirement is met at the Outfall Point ✓

Bioretention Basin	Discharge Rate	High Water
2 Year, 20 Minute Storm	0.08 cfs	592.90
15 Year, 20 Minute Storm	0.10 cfs	593.29
25 Year, 20 Minute Storm	0.11 cfs	593.49
100 Year, 20 Minute Storm	0.12 cfs	593.68
100 Year, 20 Minute Storm LFB	20.58 cfs	595.41

Bioretention Basin Details

*See Details for Underdrain Information

Low Flow Slot	1.5 in Circular Orifice
Low Flow Slot Elevation	592.75
Structure Type	48 inch Standpipe
Crest Elevation	594.90
Top of Bioretention Basin Berm	596.50
Freeboard (ft)	1.09

✓ Bioretention Basin meets Freeboard Requirements ✓

Water Fluctuation (ft)	3.91

✓ Bioretention Basin meets Water Fluctuation Requirements ✓

Water Quality

The water quality volume calculation follows the requirements of the "Georgia Stormwater Management Manual Volumes 1, 2". The FUTURE condition has more impervious area than the CURRENT, therefore the water quality calculations analyze the FUTURE condition. If the BMP suffices for the FUTURE condition, it shall suffice for the CURRENT condition.

The Bioretention Basin within Drainage Area I utilizes natural chemical, biological, and physical properties of plants, microbes, and soils to filter, treat, and infiltrate stormwater runoff.

Table 14: FUTURE Bioretention Basin Routing Area Treated – Drainage Area I breaks down the areas navigating to the Bioretention Basin and displays the portions of impervious and pervious.

Table 14: FUTURE Bioretention Basin Routing Area Treated – Drainage Area I

Onsite/ Offsite	Cover	% Impervious	Basin Inflow Area (acres)	Impervious Area (acres)	Pervious Area (acres)
Onsite	Greenspace	5%	1.41	0.07	1.34
	90% Impervious	90%	1.16	1.04	0.12
	Building/Pavement	100%	1.30	1.30	-
	Basin Surface	100%	0.53	0.53	-
Offsite	46% Impervious	46%	1.55	0.71	0.84
	Building/Pavement	100%	0.02	0.02	-

Table 15: FUTURE Water Quality Volume Calculations and Design – Drainage Area I calculates the required volume of water to be water quality treated. The water quality volume provided exceeds the required water quality volume.

Table 15: FUTURE Water Quality Volume Calculations and Design – Drainage Area I

FUTURE Drainage Area I: Water Quality Volume - Bioretention Basin								
WQv = P×Rv×A/12 % Impervious (I) = Ai/A Rv = 0.05 + 0.009(I)								
P	Watershed Area (A)	Impervious Area (Ai)	% Impervious (I)	Rv	WQv		Provided WQv	
in.	acres	acres			acre-ft	cubic ft	cubic ft	Elevation
1.14	5.97	3.67	61%	0.60	0.342	14,904	15,032	592.75

*Bioretention is at an elevation of 591.50

15,032 cubic feet ≥ 14,904 cubic feet

✓ Bioretention Basin Meets Water Quality Volume Requirements ✓

Table 16: FUTURE Filter Bed Area Calculations and Design – Bioretention Basin calculates the required filter bed area. The provided filter bed area exceeds the required filter bed area.

Table 16: FUTURE Filter Bed Area Calculations and Design – Bioretention Basin

Bioretention Filter Bed Area					
Af = (WQv x df) / (k x (hf + df) x tf) df = Filter Bed Depth k = Coefficient of Permeability hf = Average Height of Water Above Filter Bed tf = Filter Bed Drain Time					
df (ft)	k (ft/day)	hf (ft)	tf (days)	Required Af (sf)	Provided Af (sf)
2.50	2.00	0.63	2	2,981	3,055

*hf is to be 0.75 or less

*The Required WQv is the "WQv" value in this calculator.

Water quality volume is the sum of the basin storage at the water quality elevation and the storage volume within the filter bed.

(See Appendix B for the Basin Volume breakdown)

Filter bed storage volume = $(v)(A_f)(d_f)$

A_f =	3,054.99	s.f.	=	Filter bed area (ft^2)
d_f =	2.50	ft	=	Filter bed depth (ft) (2.5' soil)
h =	1.25	ft	=	Depth of ponding (ft)
v =	0.40	ft	=	Porosity of the bioretention media (40% from Georgia Manual)
			=	0.4 x 3054.99 x 2.5
			=	3,055 c.f.

Pretreatment

Flow entering the basin via storm sewer conveyance undergoes pretreatment. The pretreatment traps suspended sediment and detritus at basin inlet.

Two BMP Water quality snouts are proposed as the water quality pretreatment method for the site.

Table 17: FUTURE Pretreatment Areas Tributary to Basin - Drainage Area I

Cover	% Impervious	FE 300 (acres)	FE 200 (acres)	Direct Inflow Area (acres)	FE 300 Impervious Area		FE 200 Impervious Area	
					acres	sf	acres	sf
Greenspace	5%	0.86	0.32	0.23	0.04	1,742	0.02	871
46% Impervious	46%	1.55	-	-	0.71	30,928	-	-
90% Impervious	90%	-	-	1.16	-	-	-	-
Building/Pavement	100%	0.71	0.61	-	0.71	30,928	0.61	26,572
Basin Surface	100%	-	-	0.53	-	-	-	-

A BMP Water Quality Snout at GI 301 and CI 201 provides the water quality pretreatment for the site. *Table 18: FUTURE Water Quality Volume Calculation – GI 301* and *Table 19: FUTURE Water Quality Volume Calculation – CI 201* analyzes the design of the snout on GI 301 and CI 201and confirms sufficiency for water quality treatment.

Table 18: FUTURE Water Quality Volume Calculation – GI 301

Structure: GI 301							
Structure - Round			Pipe			Sump Depth (ft)	
inside ⌀ (ft)	min inside area (ft^2)	inside area (ft^2)	inside ⌀ (ft)	inside area (ft^2)	outside ⌀ (in)	Min	Provided
4.00	7.36	12.57	1.25	1.23	19.50	4.00	4.00
Structure Area/Pipe Area ≈			10	(6-7 Minimum)			
Sediment Storage Volume (ft^3) =			50.27				
Provided Snout =			**24 R**				
Allowable Outside ⌀ =			**18.0 inches - 23.9 inches**				
Allowable Structure Sizes =			**48 inch - 60 inch ⌀ structure**				

The manufacturer specifies the size of the snout based on the outflow pipe of the structure at GI 301. Manufacturers recommended the 24 R Snout for the 15 inch RCP with a 19.5 inch outside diameter. The 24 R Snout allows for maximum pipes size of 23.9 inch outside diameter.

Specifications states the sump depth is to be a minimum of 2.5 times the inside diameter of the outflow pipe or 3 feet; a sump of 4 feet is provided and meets requirements. The sump provides prevention of sediment resuspension. The sump of the structure provides 50.27 ft^2 of sediment storage volume.

The snout design at GI 301 meets requirements specified by the manufacturer regarding the 24 R BMP Water Quality Snout. Refer to Appendix D for Snout Details.

Table 19: FUTURE Water Quality Volume Calculation – CI 201

Structure: CI 201							
Structure - Round			Pipe			Sump Depth (ft)	
inside ⌀ (ft)	min inside area (ft^2)	inside area (ft^2)	inside ⌀ (ft)	inside area (ft^2)	outside ⌀ (in)	Min	Provided
4.00	4.71	12.57	1.00	0.79	16.00	3.00	3.00
Structure Area/Pipe Area ≈			16	(6-7 Minimum)			
Sediment Storage Volume (ft^3) =			37.70				
Provided Snout =			**18 R**				
Allowable Outside ⌀ =			**12 inches - 17.9 inches**				
Allowable Structure Sizes =			**48 inch - 60 inch ⌀ structure**				

The manufacturer specifies the size of the snout based on the outflow pipe of the structure at CI 201. Manufacturers recommended the 18 R Snout for the 12 inch RCP with a 16 inch outside diameter. The 18 R Snout allows for maximum pipes size of 17.9 inch outside diameter.

Specifications states the sump depth is to be a minimum of 2.5 times the inside diameter of the outflow pipe or 3 feet; a sump of 3 feet is provided and meets requirements. The sump provides prevention of sediment resuspension. The sump of the structure provides 37.70 ft^2 of sediment storage volume.

The snout design at CI 201 meets requirements specified by the manufacturer regarding the 18 R BMP Water Quality Snout. Refer to Appendix D for Snout Details.

Appendices

Appendix A

- Soils Report

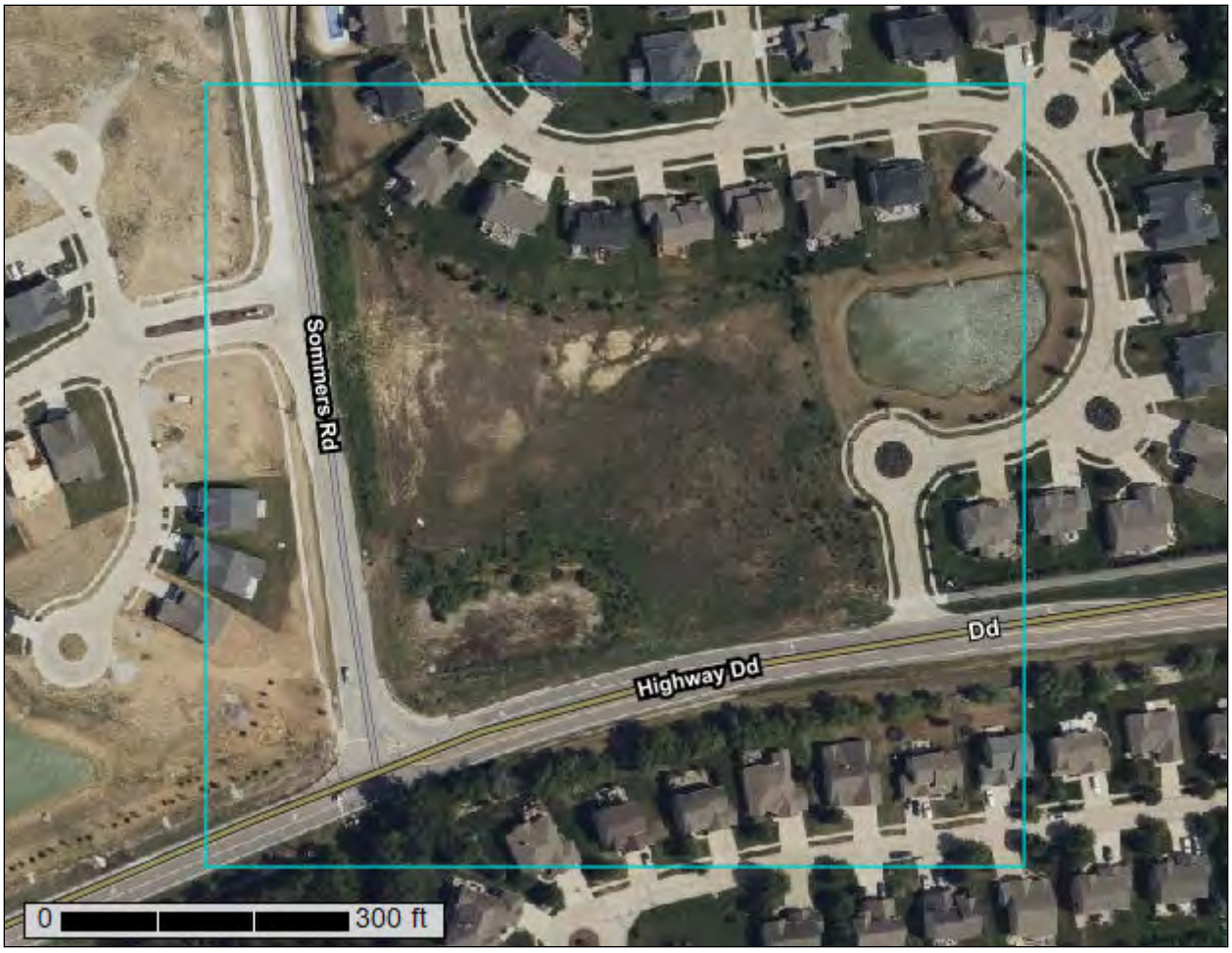
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for St. Charles County, Missouri



BAX PROJECT NO. 03-12478E
10/09/2023
AKS

September 5, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

BAX PROJECT NO. 03-12478E
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MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: St. Charles County, Missouri
Survey Area Data: Version 23, Sep 7, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 22, 2022—Aug 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
50054	Armster silt loam, 2 to 7 percent slopes	7.7	47.9%
50059	Mexico silt loam, 1 to 4 percent slopes, eroded	8.3	52.1%
Totals for Area of Interest		**16.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

St. Charles County, Missouri

50054—Armster silt loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2y8cn
Elevation: 570 to 980 feet
Mean annual precipitation: 35 to 43 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Armster and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Armster

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over till

Typical profile

Ap - 0 to 6 inches: silt loam
2Bt1 - 6 to 11 inches: clay loam
2Bt2 - 11 to 31 inches: clay
2Btg - 31 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R109XY046MO - Till Upland Savanna
Hydric soil rating: No

Minor Components

Leonard

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Hydric soil rating: Yes

Armstrong

Percent of map unit: 7 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY006MO - Till Upland Prairie
Hydric soil rating: No

Keswick

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F109XY007MO - Till Upland Woodland
Hydric soil rating: No

50059—Mexico silt loam, 1 to 4 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2wvc5
Elevation: 570 to 920 feet
Mean annual precipitation: 37 to 41 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 189 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Mexico and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mexico

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over pedisediment

Typical profile

Ap - 0 to 7 inches: silt loam
Btg1 - 7 to 15 inches: silt loam
Btg2 - 15 to 34 inches: clay
Btg3 - 34 to 42 inches: silty clay loam
2Btg4 - 42 to 79 inches: silty clay loam

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Minor Components

Armstrong

Percent of map unit: 7 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R109XY006MO - Till Upland Prairie
Hydric soil rating: No

Putnam

Percent of map unit: 5 percent
Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Ecological site: R113XY001MO - Claypan Summit Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Leonard

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R113XY002MO - Loess Upland Prairie
Hydric soil rating: Yes

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Appendix B

- Bioretention Basin Volume
- Time of Concentration

Bioretention Basin Volume				
Contour Elevation	Contour Area	A1 + A2 + SQRT(A1*A2)	Incremental Volume	Total Volume
(ft)	(ft^2)	(ft)	(ft^3)	(ft^3)
591.5	3,055	0.00	0.00	0.00
592	8,335	16,436	2,739	2,739
593	16,787	36,950	12,317	15,056
594	18,504	52,915	17,638	32,694
595	20,278	58,152	19,384	52,078
596	22,110	63,562	21,187	73,266
596.5	23,046	67,729	11,288	84,554

Basin storage volume at 592.75 = 11,977 c.f.

Total volume provided = 11,977 c.f. + 3,055 c.f. = 15,032 c.f.

BAX ENGINEERING
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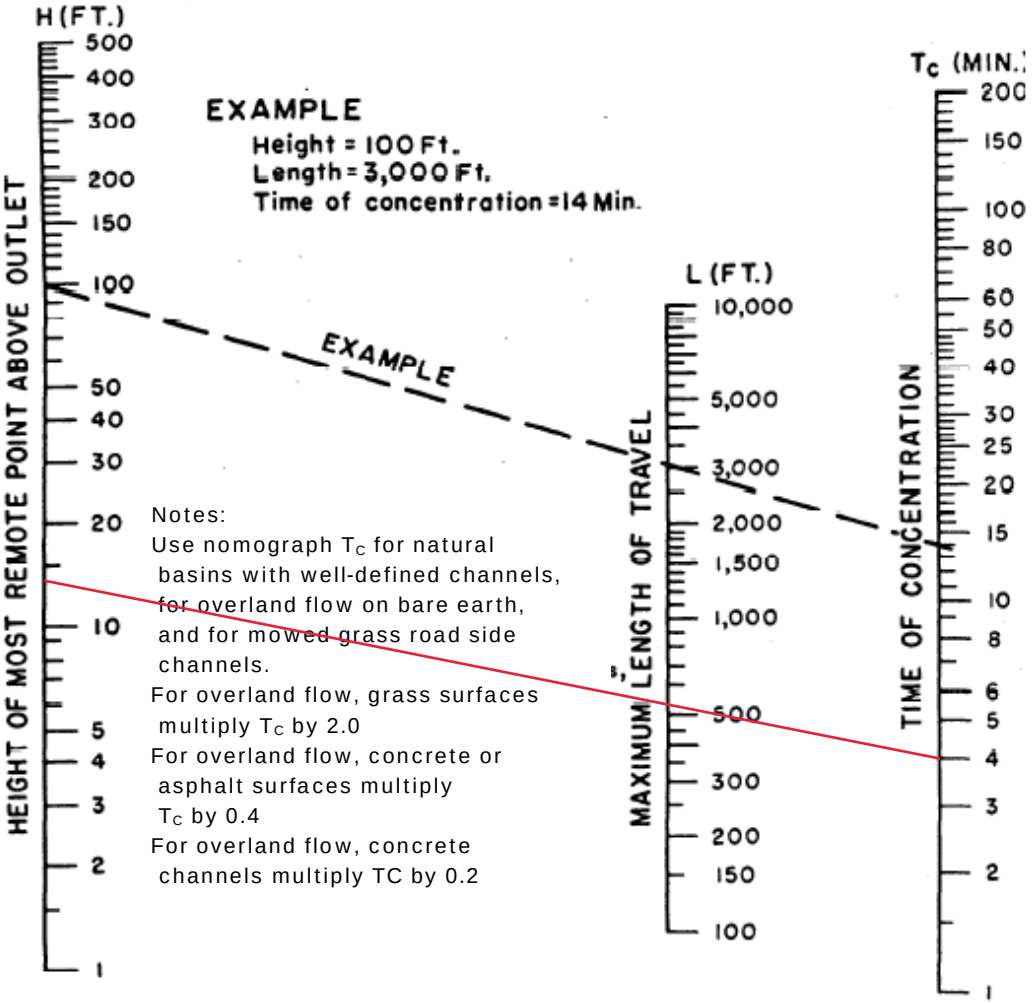
Project: Children's Lighthouse Childcare Center
Date: 08/31/2023 Project No: 03-12478E
Designer: AKS Checked:

TIME OF CONCENTRATION FOR SMALL DRAINAGE BASINS



OVERLAND FLOW

Δ Height = 14.15 ft

Length = 517.72 ft

$T_{Overland}$ = 4 minutes

STORM SEWER TRAVEL TIME

T_{storm}=Pipe Length (L) * Assumed Velocity (V)
L = xx ft = 524.91 ft
V = xx ft/s = 7 ft/s
T_{storm} = xx ft / 7 ft/s / 60 sec/min =xx min
Tstorm = 524.91 / 7 / 60 = 1.25 minutes

Total Time of Concentration = $T_{Overland}$ + T_{storm} = xx + xx = xx → USE xx min.

Total Time of Concentration = 4 + 1.25 = 5.25 **-> use 5 minutes**

Appendix C

- Pondpack Routing Calculations: 2 Year 20 Minute Storm, 15 Year 20 Minute Storm, 25 Year 20 Minute Storm, 100 Year 20 Minute Storm, & 100 Year 20 Minute Low Flow Blocked Storm
- FUTURE Pondpack Routing Calculations: 2 Year 20 Minute Storm, 15 Year 20 Minute Storm, 25 Year 20 Minute Storm, 100 Year 20 Minute Storm, & 100 Year 20 Minute Low Flow Blocked Storm

Table of Contents

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
Current Basin Inflow	Post-Development 2 year 20 min	0	0.275	5.00	9.99
Current Basin Inflow	Post-Development 15 year 20 min	0	0.408	5.00	14.80
Current Basin Inflow	Post-Development 25 year 20 min	0	0.479	5.00	17.39
Current Basin Inflow	Post-Development 100 year 20 min	0	0.549	5.00	19.94
Current Basin Inflow	Post-Developed 100 year 20 min LFB	0	0.549	5.00	19.94

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
Current GI	Post-Development 2 year 20 min	0	0.008	25.00	0.06
Current GI	Post-Development 15 year 20 min	0	0.011	25.00	0.10
Current GI	Post-Development 25 year 20 min	0	0.012	25.00	0.10
Current GI	Post-Development 100 year 20 min	0	0.013	25.00	0.11
Current GI	Post-Developed 100 year 20 min LFB	0	0.542	20.00	18.01

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Current Basin (IN)	Post-Development 2 year 20 min	0	0.275	5.00	9.99	(N/A)	(N/A)
Current Basin (OUT)	Post-Development 2 year 20 min	0	0.008	25.00	0.06	592.80	0.273
Current Basin (IN)	Post-Development 15 year 20 min	0	0.408	5.00	14.80	(N/A)	(N/A)
Current Basin (OUT)	Post-Development 15 year 20 min	0	0.011	25.00	0.10	593.15	0.405

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Current Basin (IN)	Post-Development 25 year 20 min	0	0.479	5.00	17.39	(N/A)	(N/A)
Current Basin (OUT)	Post-Development 25 year 20 min	0	0.012	25.00	0.10	593.33	0.476
Current Basin (IN)	Post-Development 100 year 20 min	0	0.549	5.00	19.94	(N/A)	(N/A)
Current Basin (OUT)	Post-Development 100 year 20 min	0	0.013	25.00	0.11	593.51	0.547
Current Basin (IN)	Post-Developed 100 year 20 min LFB	0	0.549	5.00	19.94	(N/A)	(N/A)
Current Basin (OUT)	Post-Developed 100 year 20 min LFB	0	0.542	20.00	18.01	595.37	1.369

Subsection: Read Hydrograph
Label: Current Basin Inflow

Scenario: Post-Development 2 year 20 min

Peak Discharge	9.99 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.275 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	2.00	4.00	5.99	7.99
5.00	9.99	9.99	9.99	9.99	9.99
10.00	9.99	9.99	9.99	9.99	9.99
15.00	9.99	9.99	9.99	9.99	9.99
20.00	9.99	7.99	5.99	4.00	2.00
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Read Hydrograph
Label: Current Basin Inflow

Scenario: Post-Development 15 year 20 min

Peak Discharge	14.80 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.408 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	2.96	5.92	8.88	11.84
5.00	14.80	14.80	14.80	14.80	14.80
10.00	14.80	14.80	14.80	14.80	14.80
15.00	14.80	14.80	14.80	14.80	14.80
20.00	14.80	11.84	8.88	5.92	2.96
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Peak Discharge	17.39 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.479 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	3.48	6.96	10.43	13.91
5.00	17.39	17.39	17.39	17.39	17.39
10.00	17.39	17.39	17.39	17.39	17.39
15.00	17.39	17.39	17.39	17.39	17.39
20.00	17.39	13.91	10.43	6.96	3.48
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Read Hydrograph
Scenario: Post-Development 100 year 20 min
Label: Current Basin Inflow

Peak Discharge	19.94 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.549 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	3.99	7.98	11.96	15.95
5.00	19.94	19.94	19.94	19.94	19.94
10.00	19.94	19.94	19.94	19.94	19.94
15.00	19.94	19.94	19.94	19.94	19.94
20.00	19.94	15.95	11.96	7.98	3.99
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Elevation-Area Volume Curve
Scenario: Post-Development 15 year 20 min
Label: Current Basin

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
591.50	0.0	3,055.000	0.000	0.000	0.000
592.00	0.0	8,335.000	16,436.130	0.063	0.063
593.00	0.0	16,787.000	36,950.763	0.283	0.346
594.00	0.0	18,504.000	52,915.603	0.405	0.751
595.00	0.0	20,278.000	58,152.702	0.445	1.196
596.00	0.0	22,110.000	63,562.196	0.486	1.682
596.50	0.0	23,046.000	67,729.149	0.259	1.941

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Requested Pond Water Surface Elevations	
Minimum (Headwater)	591.50 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	596.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Stand Pipe	Riser	Forward	Culvert	594.90	596.50
Culvert-Circular	Culvert	Forward	TW	586.07	596.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Label: LFB OS 100

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.0 in
Length	51.45 ft
Length (Computed Barrel)	51.46 ft
Slope (Computed)	0.018 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.018
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.086
T2 ratio (HW/D)	1.188
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	587.70 ft	T1 Flow	7.58 ft³/s
T2 Elevation	587.85 ft	T2 Flow	8.66 ft³/s

Label: LFB OS 100

Structure ID: Riser Structure Type: Stand Pipe	
Number of Openings	1
Elevation	594.90 ft
Diameter	72.0 in
Orifice Area	28.3 ft²
Orifice Coefficient	0.600
Weir Length	18.85 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
591.50	0.00	(N/A)	0.00
591.55	0.00	(N/A)	0.00
591.60	0.00	(N/A)	0.00
591.65	0.00	(N/A)	0.00
591.70	0.00	(N/A)	0.00
591.75	0.00	(N/A)	0.00
591.80	0.00	(N/A)	0.00
591.85	0.00	(N/A)	0.00
591.90	0.00	(N/A)	0.00
591.95	0.00	(N/A)	0.00
592.00	0.00	(N/A)	0.00
592.05	0.00	(N/A)	0.00
592.10	0.00	(N/A)	0.00
592.15	0.00	(N/A)	0.00
592.20	0.00	(N/A)	0.00
592.25	0.00	(N/A)	0.00
592.30	0.00	(N/A)	0.00
592.35	0.00	(N/A)	0.00
592.40	0.00	(N/A)	0.00
592.45	0.00	(N/A)	0.00
592.50	0.00	(N/A)	0.00
592.55	0.00	(N/A)	0.00
592.60	0.00	(N/A)	0.00
592.65	0.00	(N/A)	0.00
592.70	0.00	(N/A)	0.00
592.75	0.00	(N/A)	0.00
592.80	0.00	(N/A)	0.00
592.85	0.00	(N/A)	0.00
592.90	0.00	(N/A)	0.00
592.95	0.00	(N/A)	0.00
593.00	0.00	(N/A)	0.00
593.05	0.00	(N/A)	0.00
593.10	0.00	(N/A)	0.00
593.15	0.00	(N/A)	0.00
593.20	0.00	(N/A)	0.00
593.25	0.00	(N/A)	0.00
593.30	0.00	(N/A)	0.00
593.35	0.00	(N/A)	0.00
593.40	0.00	(N/A)	0.00
593.45	0.00	(N/A)	0.00
593.50	0.00	(N/A)	0.00
593.55	0.00	(N/A)	0.00
593.60	0.00	(N/A)	0.00

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
593.65	0.00	(N/A)	0.00
593.70	0.00	(N/A)	0.00
593.75	0.00	(N/A)	0.00
593.80	0.00	(N/A)	0.00
593.85	0.00	(N/A)	0.00
593.90	0.00	(N/A)	0.00
593.95	0.00	(N/A)	0.00
594.00	0.00	(N/A)	0.00
594.05	0.00	(N/A)	0.00
594.10	0.00	(N/A)	0.00
594.15	0.00	(N/A)	0.00
594.20	0.00	(N/A)	0.00
594.25	0.00	(N/A)	0.00
594.30	0.00	(N/A)	0.00
594.35	0.00	(N/A)	0.00
594.40	0.00	(N/A)	0.00
594.45	0.00	(N/A)	0.00
594.50	0.00	(N/A)	0.00
594.55	0.00	(N/A)	0.00
594.60	0.00	(N/A)	0.00
594.65	0.00	(N/A)	0.00
594.70	0.00	(N/A)	0.00
594.75	0.00	(N/A)	0.00
594.80	0.00	(N/A)	0.00
594.85	0.00	(N/A)	0.00
594.90	0.00	(N/A)	0.00
594.95	0.63	(N/A)	0.00
595.00	1.79	(N/A)	0.00
595.05	3.29	(N/A)	0.00
595.10	5.06	(N/A)	0.00
595.15	7.07	(N/A)	0.00
595.20	9.29	(N/A)	0.00
595.25	11.71	(N/A)	0.00
595.30	14.31	(N/A)	0.00
595.35	17.07	(N/A)	0.00
595.40	19.99	(N/A)	0.00
595.45	23.07	(N/A)	0.00
595.50	26.28	(N/A)	0.00
595.55	28.86	(N/A)	0.00
595.60	28.95	(N/A)	0.00
595.65	29.03	(N/A)	0.00
595.70	29.12	(N/A)	0.00
595.75	29.21	(N/A)	0.00

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
595.80	29.29	(N/A)	0.00
595.85	29.37	(N/A)	0.00
595.90	29.46	(N/A)	0.00
595.95	29.54	(N/A)	0.00
596.00	29.62	(N/A)	0.00
596.05	29.71	(N/A)	0.00
596.10	29.79	(N/A)	0.00
596.15	29.87	(N/A)	0.00
596.20	29.95	(N/A)	0.00
596.25	30.03	(N/A)	0.00
596.30	30.11	(N/A)	0.00
596.35	30.19	(N/A)	0.00
596.40	30.26	(N/A)	0.00
596.45	30.34	(N/A)	0.00
596.50	30.42	(N/A)	0.00

Contributing Structures
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Composite Outflow Summary

Contributing Structures
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Subsection: Composite Rating Curve

Scenario: Post-Developed 100 year 20 min LFB

Label: LFB OS 100

Composite Outflow Summary

Contributing Structures
Riser,Culvert
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Requested Pond Water Surface Elevations	
Minimum (Headwater)	591.50 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	596.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	Culvert	592.75	596.50
Stand Pipe	Riser	Forward	Culvert	594.90	596.50
User Defined Table	Bioretention	Forward	Culvert	591.50	596.50
Culvert-Circular	Culvert	Forward	TW	586.07	596.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data Scenario: Post-Development 15 year 20 min

Label: OS 100

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.0 in
Length	51.45 ft
Length (Computed Barrel)	51.46 ft
Slope (Computed)	0.018 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.018
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.086
T2 ratio (HW/D)	1.188
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	587.70 ft	T1 Flow	7.58 ft³/s
T2 Elevation	587.85 ft	T2 Flow	8.66 ft³/s

Structure ID: Riser Structure Type: Stand Pipe	
Number of Openings	1
Elevation	594.90 ft
Diameter	72.0 in
Orifice Area	28.3 ft²
Orifice Coefficient	0.600
Weir Length	18.85 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Bioretention
Structure Type: User Defined Table

Elevation (ft)	Flow (ft³/s)
591.50	0.06
592.60	0.06
596.50	0.06

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	592.75 ft
Orifice Diameter	1.5 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft

Convergence Tolerances	
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
591.50	0.06	(N/A)	0.00
591.55	0.06	(N/A)	0.00
591.60	0.06	(N/A)	0.00
591.65	0.06	(N/A)	0.00
591.70	0.06	(N/A)	0.00
591.75	0.06	(N/A)	0.00
591.80	0.06	(N/A)	0.00
591.85	0.06	(N/A)	0.00
591.90	0.06	(N/A)	0.00
591.95	0.06	(N/A)	0.00
592.00	0.06	(N/A)	0.00
592.05	0.06	(N/A)	0.00
592.10	0.06	(N/A)	0.00
592.15	0.06	(N/A)	0.00
592.20	0.06	(N/A)	0.00
592.25	0.06	(N/A)	0.00
592.30	0.06	(N/A)	0.00
592.35	0.06	(N/A)	0.00
592.40	0.06	(N/A)	0.00
592.45	0.06	(N/A)	0.00
592.50	0.06	(N/A)	0.00
592.55	0.06	(N/A)	0.00
592.60	0.06	(N/A)	0.00
592.65	0.06	(N/A)	0.00
592.70	0.06	(N/A)	0.00
592.75	0.06	(N/A)	0.00
592.80	0.06	(N/A)	0.00
592.85	0.07	(N/A)	0.00
592.90	0.08	(N/A)	0.00
592.95	0.08	(N/A)	0.00
593.00	0.09	(N/A)	0.00
593.05	0.09	(N/A)	0.00
593.10	0.09	(N/A)	0.00
593.15	0.10	(N/A)	0.00
593.20	0.10	(N/A)	0.00
593.25	0.10	(N/A)	0.00
593.30	0.10	(N/A)	0.00
593.35	0.10	(N/A)	0.00
593.40	0.11	(N/A)	0.00
593.45	0.11	(N/A)	0.00
593.50	0.11	(N/A)	0.00
593.55	0.11	(N/A)	0.00
593.60	0.12	(N/A)	0.00
593.65	0.12	(N/A)	0.00

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
593.70	0.12	(N/A)	0.00
593.75	0.12	(N/A)	0.00
593.80	0.12	(N/A)	0.00
593.85	0.12	(N/A)	0.00
593.90	0.12	(N/A)	0.00
593.95	0.12	(N/A)	0.00
594.00	0.13	(N/A)	0.00
594.05	0.13	(N/A)	0.00
594.10	0.13	(N/A)	0.00
594.15	0.13	(N/A)	0.00
594.20	0.13	(N/A)	0.00
594.25	0.13	(N/A)	0.00
594.30	0.13	(N/A)	0.00
594.35	0.14	(N/A)	0.00
594.40	0.14	(N/A)	0.00
594.45	0.14	(N/A)	0.00
594.50	0.14	(N/A)	0.00
594.55	0.14	(N/A)	0.00
594.60	0.14	(N/A)	0.00
594.65	0.14	(N/A)	0.00
594.70	0.14	(N/A)	0.00
594.75	0.14	(N/A)	0.00
594.80	0.14	(N/A)	0.00
594.85	0.15	(N/A)	0.00
594.90	0.15	(N/A)	0.00
594.95	0.78	(N/A)	0.00
595.00	1.94	(N/A)	0.00
595.05	3.44	(N/A)	0.00
595.10	5.21	(N/A)	0.00
595.15	7.22	(N/A)	0.00
595.20	9.44	(N/A)	0.00
595.25	11.86	(N/A)	0.00
595.30	14.46	(N/A)	0.00
595.35	17.23	(N/A)	0.00
595.40	20.15	(N/A)	0.00
595.45	23.21	(N/A)	0.00
595.50	26.39	(N/A)	0.00
595.55	28.87	(N/A)	0.00
595.60	28.95	(N/A)	0.00
595.65	29.04	(N/A)	0.00
595.70	29.12	(N/A)	0.00
595.75	29.21	(N/A)	0.00
595.80	29.29	(N/A)	0.00
595.85	29.37	(N/A)	0.00

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
595.90	29.46	(N/A)	0.00
595.95	29.54	(N/A)	0.00
596.00	29.62	(N/A)	0.00
596.05	29.71	(N/A)	0.00
596.10	29.79	(N/A)	0.00
596.15	29.87	(N/A)	0.00
596.20	29.95	(N/A)	0.00
596.25	30.03	(N/A)	0.00
596.30	30.11	(N/A)	0.00
596.35	30.19	(N/A)	0.00
596.40	30.26	(N/A)	0.00
596.45	30.34	(N/A)	0.00
596.50	30.42	(N/A)	0.00

Contributing Structures
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
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Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
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Orifice,Bioretention,Culvert (no Q: Riser)
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Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
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Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
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Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Riser,Bioretention,Culvert (no Q: Orifice)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	594.90 ft
Volume (Initial)	1.149 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.00	0.000	3,055.000	0.00	0.00	0.00
591.55	0.00	0.004	3,466.203	0.00	0.00	5.43
591.60	0.00	0.008	3,903.362	0.00	0.00	11.57
591.65	0.00	0.013	4,366.474	0.00	0.00	18.46
591.70	0.00	0.018	4,855.542	0.00	0.00	26.14
591.75	0.00	0.024	5,370.565	0.00	0.00	34.66
591.80	0.00	0.030	5,911.542	0.00	0.00	44.05
591.85	0.00	0.037	6,478.474	0.00	0.00	54.38
591.90	0.00	0.045	7,071.362	0.00	0.00	65.66
591.95	0.00	0.054	7,690.203	0.00	0.00	77.96
592.00	0.00	0.063	8,335.000	0.00	0.00	91.31
592.05	0.00	0.073	8,688.038	0.00	0.00	105.50
592.10	0.00	0.083	9,048.397	0.00	0.00	120.28
592.15	0.00	0.093	9,416.080	0.00	0.00	135.66
592.20	0.00	0.104	9,791.084	0.00	0.00	151.67
592.25	0.00	0.116	10,173.411	0.00	0.00	168.30
592.30	0.00	0.128	10,563.061	0.00	0.00	185.58
592.35	0.00	0.140	10,960.032	0.00	0.00	203.52
592.40	0.00	0.153	11,364.326	0.00	0.00	222.12
592.45	0.00	0.166	11,775.943	0.00	0.00	241.40
592.50	0.00	0.180	12,194.882	0.00	0.00	261.38
592.55	0.00	0.194	12,621.143	0.00	0.00	282.06
592.60	0.00	0.209	13,054.726	0.00	0.00	303.45
592.65	0.00	0.224	13,495.632	0.00	0.00	325.58
592.70	0.00	0.240	13,943.861	0.00	0.00	348.44
592.75	0.00	0.256	14,399.411	0.00	0.00	372.06
592.80	0.00	0.273	14,862.284	0.00	0.00	396.44
592.85	0.00	0.290	15,332.480	0.00	0.00	421.60
592.90	0.00	0.308	15,809.997	0.00	0.00	447.56
592.95	0.00	0.327	16,294.838	0.00	0.00	474.31

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.00	0.00	0.346	16,787.000	0.00	0.00	501.88
593.05	0.00	0.365	16,870.865	0.00	0.00	529.92
593.10	0.00	0.384	16,954.939	0.00	0.00	558.11
593.15	0.00	0.404	17,039.221	0.00	0.00	586.44
593.20	0.00	0.423	17,123.713	0.00	0.00	614.91
593.25	0.00	0.443	17,208.414	0.00	0.00	643.52
593.30	0.00	0.463	17,293.323	0.00	0.00	672.27
593.35	0.00	0.483	17,378.442	0.00	0.00	701.16
593.40	0.00	0.503	17,463.770	0.00	0.00	730.20
593.45	0.00	0.523	17,549.306	0.00	0.00	759.38
593.50	0.00	0.543	17,635.052	0.00	0.00	788.70
593.55	0.00	0.563	17,721.006	0.00	0.00	818.16
593.60	0.00	0.584	17,807.170	0.00	0.00	847.77
593.65	0.00	0.604	17,893.542	0.00	0.00	877.52
593.70	0.00	0.625	17,980.123	0.00	0.00	907.41
593.75	0.00	0.646	18,066.914	0.00	0.00	937.45
593.80	0.00	0.666	18,153.913	0.00	0.00	967.64
593.85	0.00	0.687	18,241.121	0.00	0.00	997.97
593.90	0.00	0.708	18,328.539	0.00	0.00	1,028.44
593.95	0.00	0.729	18,416.165	0.00	0.00	1,059.06
594.00	0.00	0.751	18,504.000	0.00	0.00	1,089.83
594.05	0.00	0.772	18,590.772	0.00	0.00	1,120.74
594.10	0.00	0.793	18,677.746	0.00	0.00	1,151.80
594.15	0.00	0.815	18,764.924	0.00	0.00	1,183.00
594.20	0.00	0.836	18,852.305	0.00	0.00	1,214.35
594.25	0.00	0.858	18,939.888	0.00	0.00	1,245.84
594.30	0.00	0.880	19,027.675	0.00	0.00	1,277.48
594.35	0.00	0.902	19,115.665	0.00	0.00	1,309.27
594.40	0.00	0.924	19,203.857	0.00	0.00	1,341.20
594.45	0.00	0.946	19,292.253	0.00	0.00	1,373.28
594.50	0.00	0.968	19,380.851	0.00	0.00	1,405.51
594.55	0.00	0.990	19,469.653	0.00	0.00	1,437.88
594.60	0.00	1.013	19,558.657	0.00	0.00	1,470.40
594.65	0.00	1.035	19,647.865	0.00	0.00	1,503.08
594.70	0.00	1.058	19,737.275	0.00	0.00	1,535.90
594.75	0.00	1.080	19,826.888	0.00	0.00	1,568.87
594.80	0.00	1.103	19,916.705	0.00	0.00	1,601.99
594.85	0.00	1.126	20,006.724	0.00	0.00	1,635.26
594.90	0.00	1.149	20,096.946	0.00	0.00	1,668.68
594.95	0.63	1.172	20,187.372	0.00	0.63	1,702.88
595.00	1.79	1.196	20,278.000	0.00	1.79	1,737.76
595.05	3.29	1.219	20,367.719	0.00	3.29	1,773.12
595.10	5.06	1.242	20,457.635	0.00	5.06	1,808.92
595.15	7.07	1.266	20,547.750	0.00	7.07	1,845.10

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
595.20	9.29	1.289	20,638.063	0.00	9.29	1,881.64
595.25	11.71	1.313	20,728.574	0.00	11.71	1,918.53
595.30	14.31	1.337	20,819.282	0.00	14.31	1,955.75
595.35	17.07	1.361	20,910.189	0.00	17.07	1,993.29
595.40	19.99	1.385	21,001.294	0.00	19.99	2,031.14
595.45	23.07	1.409	21,092.597	0.00	23.07	2,069.29
595.50	26.28	1.434	21,184.098	0.00	26.28	2,107.74
595.55	28.86	1.458	21,275.797	0.00	28.86	2,145.70
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.03	1.507	21,459.789	0.00	29.03	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 2 year 20 min
Label: Current Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 2 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 2 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 15 year 20 min
Label: Current Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 15 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 15 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 25 year 20 min
Label: Current Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 25 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 25 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 100 year 20 min
Label: Current Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 100 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 100 year 20 min
Label: Current Basin

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Label: Current Basin (IN)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	594.90 ft
Volume (Initial)	1.149 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	19.94 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	18.01 ft³/s	Time to Peak (Flow, Outlet)	20.00 min

Elevation (Water Surface, Peak)	595.37 ft
Volume (Peak)	1.369 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	1.149 ac-ft
Volume (Total Inflow)	0.549 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.542 ac-ft
Volume (Retained)	1.156 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Label: Current Basin (IN)

Scenario: Post-Development 2 year 20 min

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	9.99 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.06 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	592.80 ft
Volume (Peak)	0.273 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.275 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.008 ac-ft
Volume (Retained)	0.267 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Scenario: Post-Development 15 year 20 min
Label: Current Basin (IN)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	14.80 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.10 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	593.15 ft
Volume (Peak)	0.405 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.408 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.011 ac-ft
Volume (Retained)	0.397 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Label: Current Basin (IN)

Scenario: Post-Development 25 year 20 min

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	17.39 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.10 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	593.33 ft
Volume (Peak)	0.476 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.479 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.012 ac-ft
Volume (Retained)	0.467 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Label: Current Basin (IN)

Scenario: Post-Development 100 year 20 min

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	19.94 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.11 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	593.51 ft
Volume (Peak)	0.547 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.549 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.013 ac-ft
Volume (Retained)	0.537 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Summary for Hydrograph Addition at 'Current Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Current Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Current Basin Inflow	0.549	5.00	19.94
Flow (In)	Current Basin	0.549	5.00	19.94

Summary for Hydrograph Addition at 'Current Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Current Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Current Basin Inflow	0.275	5.00	9.99
Flow (In)	Current Basin	0.275	5.00	9.99

Summary for Hydrograph Addition at 'Current Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Current Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Current Basin Inflow	0.408	5.00	14.80
Flow (In)	Current Basin	0.408	5.00	14.80

Summary for Hydrograph Addition at 'Current Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Current Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Current Basin Inflow	0.479	5.00	17.39
Flow (In)	Current Basin	0.479	5.00	17.39

Summary for Hydrograph Addition at 'Current Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Current Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Current Basin Inflow	0.549	5.00	19.94
Flow (In)	Current Basin	0.549	5.00	19.94

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
Future Basin Inflow	Post-Development 2 year 20 min	0	0.310	5.00	11.27
Future Basin Inflow	Post-Development 15 year 20 min	0	0.461	5.00	16.73
Future Basin Inflow	Post-Development 25 year 20 min	0	0.541	5.00	19.64
Future Basin Inflow	Post-Development 100 year 20 min	0	0.621	5.00	22.53
Future Basin Inflow	Post-Developed 100 year 20 min LFB	0	0.621	5.00	22.53

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
Future GI	Post-Development 2 year 20 min	0	0.009	25.00	0.08
Future GI	Post-Development 15 year 20 min	0	0.012	25.00	0.10
Future GI	Post-Development 25 year 20 min	0	0.013	25.00	0.11
Future GI	Post-Development 100 year 20 min	0	0.013	25.00	0.12
Future GI	Post-Developed 100 year 20 min LFB	0	0.613	20.00	20.58

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Future Basin (IN)	Post-Development 2 year 20 min	0	0.310	5.00	11.27	(N/A)	(N/A)
Future Basin (OUT)	Post-Development 2 year 20 min	0	0.009	25.00	0.08	592.90	0.308
Future Basin (IN)	Post-Development 15 year 20 min	0	0.461	5.00	16.73	(N/A)	(N/A)
Future Basin (OUT)	Post-Development 15 year 20 min	0	0.012	25.00	0.10	593.29	0.458

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Future Basin (IN)	Post-Development 25 year 20 min	0	0.541	5.00	19.64	(N/A)	(N/A)
Future Basin (OUT)	Post-Development 25 year 20 min	0	0.013	25.00	0.11	593.49	0.538
Future Basin (IN)	Post-Development 100 year 20 min	0	0.621	5.00	22.53	(N/A)	(N/A)
Future Basin (OUT)	Post-Development 100 year 20 min	0	0.013	25.00	0.12	593.68	0.618
Future Basin (IN)	Post-Developed 100 year 20 min LFB	0	0.621	5.00	22.53	(N/A)	(N/A)
Future Basin (OUT)	Post-Developed 100 year 20 min LFB	0	0.613	20.00	20.58	595.41	1.390

Subsection: Read Hydrograph
Label: Future Basin Inflow

Scenario: Post-Development 2 year 20 min

Peak Discharge	11.27 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.310 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	2.25	4.51	6.76	9.02
5.00	11.27	11.27	11.27	11.27	11.27
10.00	11.27	11.27	11.27	11.27	11.27
15.00	11.27	11.27	11.27	11.27	11.27
20.00	11.27	9.02	6.76	4.51	2.25
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Read Hydrograph
Label: Future Basin Inflow

Scenario: Post-Development 15 year 20 min

Peak Discharge	16.73 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.461 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	3.35	6.69	10.04	13.38
5.00	16.73	16.73	16.73	16.73	16.73
10.00	16.73	16.73	16.73	16.73	16.73
15.00	16.73	16.73	16.73	16.73	16.73
20.00	16.73	13.38	10.04	6.69	3.35
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Peak Discharge	19.64 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.541 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	3.93	7.86	11.78	15.71
5.00	19.64	19.64	19.64	19.64	19.64
10.00	19.64	19.64	19.64	19.64	19.64
15.00	19.64	19.64	19.64	19.64	19.64
20.00	19.64	15.71	11.78	7.86	3.93
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Read Hydrograph
Scenario: Post-Development 100 year 20 min
Label: Future Basin Inflow

Peak Discharge	22.53 ft³/s
Time to Peak	11.00 min
Hydrograph Volume	0.621 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1.00 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.00	0.00	4.51	9.01	13.52	18.02
5.00	22.53	22.53	22.53	22.53	22.53
10.00	22.53	22.53	22.53	22.53	22.53
15.00	22.53	22.53	22.53	22.53	22.53
20.00	22.53	18.02	13.52	9.01	4.51
25.00	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Elevation-Area Volume Curve
Scenario: Post-Development 15 year 20 min
Label: Future Basin

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
591.50	0.0	3,055.000	0.000	0.000	0.000
592.00	0.0	8,335.000	16,436.130	0.063	0.063
593.00	0.0	16,787.000	36,950.763	0.283	0.346
594.00	0.0	18,504.000	52,915.603	0.405	0.751
595.00	0.0	20,278.000	58,152.702	0.445	1.196
596.00	0.0	22,110.000	63,562.196	0.486	1.682
596.50	0.0	23,046.000	67,729.149	0.259	1.941

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Requested Pond Water Surface Elevations	
Minimum (Headwater)	591.50 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	596.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Stand Pipe	Riser	Forward	Culvert	594.90	596.50
Culvert-Circular	Culvert	Forward	TW	586.07	596.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Label: LFB OS 100

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.0 in
Length	51.45 ft
Length (Computed Barrel)	51.46 ft
Slope (Computed)	0.018 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.018
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.086
T2 ratio (HW/D)	1.188
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	587.70 ft	T1 Flow	7.58 ft³/s
T2 Elevation	587.85 ft	T2 Flow	8.66 ft³/s

Label: LFB OS 100

Structure ID: Riser Structure Type: Stand Pipe	
Number of Openings	1
Elevation	594.90 ft
Diameter	72.0 in
Orifice Area	28.3 ft²
Orifice Coefficient	0.600
Weir Length	18.85 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
591.50	0.00	(N/A)	0.00
591.55	0.00	(N/A)	0.00
591.60	0.00	(N/A)	0.00
591.65	0.00	(N/A)	0.00
591.70	0.00	(N/A)	0.00
591.75	0.00	(N/A)	0.00
591.80	0.00	(N/A)	0.00
591.85	0.00	(N/A)	0.00
591.90	0.00	(N/A)	0.00
591.95	0.00	(N/A)	0.00
592.00	0.00	(N/A)	0.00
592.05	0.00	(N/A)	0.00
592.10	0.00	(N/A)	0.00
592.15	0.00	(N/A)	0.00
592.20	0.00	(N/A)	0.00
592.25	0.00	(N/A)	0.00
592.30	0.00	(N/A)	0.00
592.35	0.00	(N/A)	0.00
592.40	0.00	(N/A)	0.00
592.45	0.00	(N/A)	0.00
592.50	0.00	(N/A)	0.00
592.55	0.00	(N/A)	0.00
592.60	0.00	(N/A)	0.00
592.65	0.00	(N/A)	0.00
592.70	0.00	(N/A)	0.00
592.75	0.00	(N/A)	0.00
592.80	0.00	(N/A)	0.00
592.85	0.00	(N/A)	0.00
592.90	0.00	(N/A)	0.00
592.95	0.00	(N/A)	0.00
593.00	0.00	(N/A)	0.00
593.05	0.00	(N/A)	0.00
593.10	0.00	(N/A)	0.00
593.15	0.00	(N/A)	0.00
593.20	0.00	(N/A)	0.00
593.25	0.00	(N/A)	0.00
593.30	0.00	(N/A)	0.00
593.35	0.00	(N/A)	0.00
593.40	0.00	(N/A)	0.00
593.45	0.00	(N/A)	0.00
593.50	0.00	(N/A)	0.00
593.55	0.00	(N/A)	0.00
593.60	0.00	(N/A)	0.00

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
593.65	0.00	(N/A)	0.00
593.70	0.00	(N/A)	0.00
593.75	0.00	(N/A)	0.00
593.80	0.00	(N/A)	0.00
593.85	0.00	(N/A)	0.00
593.90	0.00	(N/A)	0.00
593.95	0.00	(N/A)	0.00
594.00	0.00	(N/A)	0.00
594.05	0.00	(N/A)	0.00
594.10	0.00	(N/A)	0.00
594.15	0.00	(N/A)	0.00
594.20	0.00	(N/A)	0.00
594.25	0.00	(N/A)	0.00
594.30	0.00	(N/A)	0.00
594.35	0.00	(N/A)	0.00
594.40	0.00	(N/A)	0.00
594.45	0.00	(N/A)	0.00
594.50	0.00	(N/A)	0.00
594.55	0.00	(N/A)	0.00
594.60	0.00	(N/A)	0.00
594.65	0.00	(N/A)	0.00
594.70	0.00	(N/A)	0.00
594.75	0.00	(N/A)	0.00
594.80	0.00	(N/A)	0.00
594.85	0.00	(N/A)	0.00
594.90	0.00	(N/A)	0.00
594.95	0.63	(N/A)	0.00
595.00	1.79	(N/A)	0.00
595.05	3.29	(N/A)	0.00
595.10	5.06	(N/A)	0.00
595.15	7.07	(N/A)	0.00
595.20	9.29	(N/A)	0.00
595.25	11.71	(N/A)	0.00
595.30	14.31	(N/A)	0.00
595.35	17.07	(N/A)	0.00
595.40	19.99	(N/A)	0.00
595.45	23.07	(N/A)	0.00
595.50	26.28	(N/A)	0.00
595.55	28.86	(N/A)	0.00
595.60	28.95	(N/A)	0.00
595.65	29.03	(N/A)	0.00
595.70	29.12	(N/A)	0.00
595.75	29.21	(N/A)	0.00

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
595.80	29.29	(N/A)	0.00
595.85	29.37	(N/A)	0.00
595.90	29.46	(N/A)	0.00
595.95	29.54	(N/A)	0.00
596.00	29.62	(N/A)	0.00
596.05	29.71	(N/A)	0.00
596.10	29.79	(N/A)	0.00
596.15	29.87	(N/A)	0.00
596.20	29.95	(N/A)	0.00
596.25	30.03	(N/A)	0.00
596.30	30.11	(N/A)	0.00
596.35	30.19	(N/A)	0.00
596.40	30.26	(N/A)	0.00
596.45	30.34	(N/A)	0.00
596.50	30.42	(N/A)	0.00

Contributing Structures
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Composite Outflow Summary

Contributing Structures
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Composite Outflow Summary

Contributing Structures
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Requested Pond Water Surface Elevations	
Minimum (Headwater)	591.50 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	596.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice	Forward	Culvert	592.75	596.50
Stand Pipe	Riser	Forward	Culvert	594.90	596.50
User Defined Table	Bioretention	Forward	Culvert	591.50	596.50
Culvert-Circular	Culvert	Forward	TW	586.07	596.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Culvert Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.0 in
Length	51.45 ft
Length (Computed Barrel)	51.46 ft
Slope (Computed)	0.018 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.018
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.086
T2 ratio (HW/D)	1.188
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	587.70 ft	T1 Flow	7.58 ft³/s
T2 Elevation	587.85 ft	T2 Flow	8.66 ft³/s

Structure ID: Riser Structure Type: Stand Pipe	
Number of Openings	1
Elevation	594.90 ft
Diameter	72.0 in
Orifice Area	28.3 ft²
Orifice Coefficient	0.600
Weir Length	18.85 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Bioretention
Structure Type: User Defined Table

Elevation (ft)	Flow (ft³/s)
591.50	0.06
592.75	0.06
596.50	0.06

Structure ID: Orifice Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	592.75 ft
Orifice Diameter	1.5 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft

Convergence Tolerances	
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
591.50	0.06	(N/A)	0.00
591.55	0.06	(N/A)	0.00
591.60	0.06	(N/A)	0.00
591.65	0.06	(N/A)	0.00
591.70	0.06	(N/A)	0.00
591.75	0.06	(N/A)	0.00
591.80	0.06	(N/A)	0.00
591.85	0.06	(N/A)	0.00
591.90	0.06	(N/A)	0.00
591.95	0.06	(N/A)	0.00
592.00	0.06	(N/A)	0.00
592.05	0.06	(N/A)	0.00
592.10	0.06	(N/A)	0.00
592.15	0.06	(N/A)	0.00
592.20	0.06	(N/A)	0.00
592.25	0.06	(N/A)	0.00
592.30	0.06	(N/A)	0.00
592.35	0.06	(N/A)	0.00
592.40	0.06	(N/A)	0.00
592.45	0.06	(N/A)	0.00
592.50	0.06	(N/A)	0.00
592.55	0.06	(N/A)	0.00
592.60	0.06	(N/A)	0.00
592.65	0.06	(N/A)	0.00
592.70	0.06	(N/A)	0.00
592.75	0.06	(N/A)	0.00
592.80	0.06	(N/A)	0.00
592.85	0.07	(N/A)	0.00
592.90	0.08	(N/A)	0.00
592.95	0.08	(N/A)	0.00
593.00	0.09	(N/A)	0.00
593.05	0.09	(N/A)	0.00
593.10	0.09	(N/A)	0.00
593.15	0.10	(N/A)	0.00
593.20	0.10	(N/A)	0.00
593.25	0.10	(N/A)	0.00
593.30	0.10	(N/A)	0.00
593.35	0.10	(N/A)	0.00
593.40	0.11	(N/A)	0.00
593.45	0.11	(N/A)	0.00
593.50	0.11	(N/A)	0.00
593.55	0.11	(N/A)	0.00
593.60	0.12	(N/A)	0.00
593.65	0.12	(N/A)	0.00

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
593.70	0.12	(N/A)	0.00
593.75	0.12	(N/A)	0.00
593.80	0.12	(N/A)	0.00
593.85	0.12	(N/A)	0.00
593.90	0.12	(N/A)	0.00
593.95	0.12	(N/A)	0.00
594.00	0.13	(N/A)	0.00
594.05	0.13	(N/A)	0.00
594.10	0.13	(N/A)	0.00
594.15	0.13	(N/A)	0.00
594.20	0.13	(N/A)	0.00
594.25	0.13	(N/A)	0.00
594.30	0.13	(N/A)	0.00
594.35	0.14	(N/A)	0.00
594.40	0.14	(N/A)	0.00
594.45	0.14	(N/A)	0.00
594.50	0.14	(N/A)	0.00
594.55	0.14	(N/A)	0.00
594.60	0.14	(N/A)	0.00
594.65	0.14	(N/A)	0.00
594.70	0.14	(N/A)	0.00
594.75	0.14	(N/A)	0.00
594.80	0.14	(N/A)	0.00
594.85	0.15	(N/A)	0.00
594.90	0.15	(N/A)	0.00
594.95	0.78	(N/A)	0.00
595.00	1.94	(N/A)	0.00
595.05	3.44	(N/A)	0.00
595.10	5.21	(N/A)	0.00
595.15	7.22	(N/A)	0.00
595.20	9.44	(N/A)	0.00
595.25	11.86	(N/A)	0.00
595.30	14.46	(N/A)	0.00
595.35	17.23	(N/A)	0.00
595.40	20.15	(N/A)	0.00
595.45	23.21	(N/A)	0.00
595.50	26.39	(N/A)	0.00
595.55	28.87	(N/A)	0.00
595.60	28.95	(N/A)	0.00
595.65	29.04	(N/A)	0.00
595.70	29.12	(N/A)	0.00
595.75	29.21	(N/A)	0.00
595.80	29.29	(N/A)	0.00
595.85	29.37	(N/A)	0.00

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
595.90	29.46	(N/A)	0.00
595.95	29.54	(N/A)	0.00
596.00	29.62	(N/A)	0.00
596.05	29.71	(N/A)	0.00
596.10	29.79	(N/A)	0.00
596.15	29.87	(N/A)	0.00
596.20	29.95	(N/A)	0.00
596.25	30.03	(N/A)	0.00
596.30	30.11	(N/A)	0.00
596.35	30.19	(N/A)	0.00
596.40	30.26	(N/A)	0.00
596.45	30.34	(N/A)	0.00
596.50	30.42	(N/A)	0.00

Contributing Structures
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
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Bioretention,Culvert (no Q: Orifice,Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
Bioretention,Culvert (no Q: Orifice,Riser)
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Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
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Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
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Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Bioretention,Culvert (no Q: Riser)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Orifice,Bioretention,Culvert (no Q: Riser)
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Orifice,Riser,Bioretention, Culvert
Riser,Bioretention,Culvert (no Q: Orifice)

Subsection: Composite Rating Curve
Label: OS 100

Scenario: Post-Development 15 year 20 min

Composite Outflow Summary

Contributing Structures
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
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Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)
Riser,Bioretention,Culvert (no Q: Orifice)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	594.90 ft
Volume (Initial)	1.149 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.00	0.000	3,055.000	0.00	0.00	0.00
591.55	0.00	0.004	3,466.203	0.00	0.00	5.43
591.60	0.00	0.008	3,903.362	0.00	0.00	11.57
591.65	0.00	0.013	4,366.474	0.00	0.00	18.46
591.70	0.00	0.018	4,855.542	0.00	0.00	26.14
591.75	0.00	0.024	5,370.565	0.00	0.00	34.66
591.80	0.00	0.030	5,911.542	0.00	0.00	44.05
591.85	0.00	0.037	6,478.474	0.00	0.00	54.38
591.90	0.00	0.045	7,071.362	0.00	0.00	65.66
591.95	0.00	0.054	7,690.203	0.00	0.00	77.96
592.00	0.00	0.063	8,335.000	0.00	0.00	91.31
592.05	0.00	0.073	8,688.038	0.00	0.00	105.50
592.10	0.00	0.083	9,048.397	0.00	0.00	120.28
592.15	0.00	0.093	9,416.080	0.00	0.00	135.66
592.20	0.00	0.104	9,791.084	0.00	0.00	151.67
592.25	0.00	0.116	10,173.411	0.00	0.00	168.30
592.30	0.00	0.128	10,563.061	0.00	0.00	185.58
592.35	0.00	0.140	10,960.032	0.00	0.00	203.52
592.40	0.00	0.153	11,364.326	0.00	0.00	222.12
592.45	0.00	0.166	11,775.943	0.00	0.00	241.40
592.50	0.00	0.180	12,194.882	0.00	0.00	261.38
592.55	0.00	0.194	12,621.143	0.00	0.00	282.06
592.60	0.00	0.209	13,054.726	0.00	0.00	303.45
592.65	0.00	0.224	13,495.632	0.00	0.00	325.58
592.70	0.00	0.240	13,943.861	0.00	0.00	348.44
592.75	0.00	0.256	14,399.411	0.00	0.00	372.06
592.80	0.00	0.273	14,862.284	0.00	0.00	396.44
592.85	0.00	0.290	15,332.480	0.00	0.00	421.60
592.90	0.00	0.308	15,809.997	0.00	0.00	447.56
592.95	0.00	0.327	16,294.838	0.00	0.00	474.31

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.00	0.00	0.346	16,787.000	0.00	0.00	501.88
593.05	0.00	0.365	16,870.865	0.00	0.00	529.92
593.10	0.00	0.384	16,954.939	0.00	0.00	558.11
593.15	0.00	0.404	17,039.221	0.00	0.00	586.44
593.20	0.00	0.423	17,123.713	0.00	0.00	614.91
593.25	0.00	0.443	17,208.414	0.00	0.00	643.52
593.30	0.00	0.463	17,293.323	0.00	0.00	672.27
593.35	0.00	0.483	17,378.442	0.00	0.00	701.16
593.40	0.00	0.503	17,463.770	0.00	0.00	730.20
593.45	0.00	0.523	17,549.306	0.00	0.00	759.38
593.50	0.00	0.543	17,635.052	0.00	0.00	788.70
593.55	0.00	0.563	17,721.006	0.00	0.00	818.16
593.60	0.00	0.584	17,807.170	0.00	0.00	847.77
593.65	0.00	0.604	17,893.542	0.00	0.00	877.52
593.70	0.00	0.625	17,980.123	0.00	0.00	907.41
593.75	0.00	0.646	18,066.914	0.00	0.00	937.45
593.80	0.00	0.666	18,153.913	0.00	0.00	967.64
593.85	0.00	0.687	18,241.121	0.00	0.00	997.97
593.90	0.00	0.708	18,328.539	0.00	0.00	1,028.44
593.95	0.00	0.729	18,416.165	0.00	0.00	1,059.06
594.00	0.00	0.751	18,504.000	0.00	0.00	1,089.83
594.05	0.00	0.772	18,590.772	0.00	0.00	1,120.74
594.10	0.00	0.793	18,677.746	0.00	0.00	1,151.80
594.15	0.00	0.815	18,764.924	0.00	0.00	1,183.00
594.20	0.00	0.836	18,852.305	0.00	0.00	1,214.35
594.25	0.00	0.858	18,939.888	0.00	0.00	1,245.84
594.30	0.00	0.880	19,027.675	0.00	0.00	1,277.48
594.35	0.00	0.902	19,115.665	0.00	0.00	1,309.27
594.40	0.00	0.924	19,203.857	0.00	0.00	1,341.20
594.45	0.00	0.946	19,292.253	0.00	0.00	1,373.28
594.50	0.00	0.968	19,380.851	0.00	0.00	1,405.51
594.55	0.00	0.990	19,469.653	0.00	0.00	1,437.88
594.60	0.00	1.013	19,558.657	0.00	0.00	1,470.40
594.65	0.00	1.035	19,647.865	0.00	0.00	1,503.08
594.70	0.00	1.058	19,737.275	0.00	0.00	1,535.90
594.75	0.00	1.080	19,826.888	0.00	0.00	1,568.87
594.80	0.00	1.103	19,916.705	0.00	0.00	1,601.99
594.85	0.00	1.126	20,006.724	0.00	0.00	1,635.26
594.90	0.00	1.149	20,096.946	0.00	0.00	1,668.68
594.95	0.63	1.172	20,187.372	0.00	0.63	1,702.88
595.00	1.79	1.196	20,278.000	0.00	1.79	1,737.76
595.05	3.29	1.219	20,367.719	0.00	3.29	1,773.12
595.10	5.06	1.242	20,457.635	0.00	5.06	1,808.92
595.15	7.07	1.266	20,547.750	0.00	7.07	1,845.10

Subsection: Elevation-Volume-Flow Table (Pond)

Scenario: Post-Developed 100 year 20 min LFB

Label: Future Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
595.20	9.29	1.289	20,638.063	0.00	9.29	1,881.64
595.25	11.71	1.313	20,728.574	0.00	11.71	1,918.53
595.30	14.31	1.337	20,819.282	0.00	14.31	1,955.75
595.35	17.07	1.361	20,910.189	0.00	17.07	1,993.29
595.40	19.99	1.385	21,001.294	0.00	19.99	2,031.14
595.45	23.07	1.409	21,092.597	0.00	23.07	2,069.29
595.50	26.28	1.434	21,184.098	0.00	26.28	2,107.74
595.55	28.86	1.458	21,275.797	0.00	28.86	2,145.70
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.03	1.507	21,459.789	0.00	29.03	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 2 year 20 min
Label: Future Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 2 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 2 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 15 year 20 min
Label: Future Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 15 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 15 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 25 year 20 min
Label: Future Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 25 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 25 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 100 year 20 min
Label: Future Basin

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
591.50	0.06	0.000	3,055.000	0.00	0.06	0.06
591.55	0.06	0.004	3,466.203	0.00	0.06	5.49
591.60	0.06	0.008	3,903.362	0.00	0.06	11.63
591.65	0.06	0.013	4,366.474	0.00	0.06	18.52
591.70	0.06	0.018	4,855.542	0.00	0.06	26.20
591.75	0.06	0.024	5,370.565	0.00	0.06	34.72
591.80	0.06	0.030	5,911.542	0.00	0.06	44.12
591.85	0.06	0.037	6,478.474	0.00	0.06	54.44
591.90	0.06	0.045	7,071.362	0.00	0.06	65.72
591.95	0.06	0.054	7,690.203	0.00	0.06	78.02
592.00	0.06	0.063	8,335.000	0.00	0.06	91.37
592.05	0.06	0.073	8,688.038	0.00	0.06	105.56
592.10	0.06	0.083	9,048.397	0.00	0.06	120.34
592.15	0.06	0.093	9,416.080	0.00	0.06	135.72
592.20	0.06	0.104	9,791.084	0.00	0.06	151.73
592.25	0.06	0.116	10,173.411	0.00	0.06	168.36
592.30	0.06	0.128	10,563.061	0.00	0.06	185.64
592.35	0.06	0.140	10,960.032	0.00	0.06	203.58
592.40	0.06	0.153	11,364.326	0.00	0.06	222.18
592.45	0.06	0.166	11,775.943	0.00	0.06	241.46
592.50	0.06	0.180	12,194.882	0.00	0.06	261.44
592.55	0.06	0.194	12,621.143	0.00	0.06	282.12
592.60	0.06	0.209	13,054.726	0.00	0.06	303.51
592.65	0.06	0.224	13,495.632	0.00	0.06	325.64
592.70	0.06	0.240	13,943.861	0.00	0.06	348.50
592.75	0.06	0.256	14,399.411	0.00	0.06	372.12
592.80	0.06	0.273	14,862.284	0.00	0.06	396.51
592.85	0.07	0.290	15,332.480	0.00	0.07	421.68
592.90	0.08	0.308	15,809.997	0.00	0.08	447.64
592.95	0.08	0.327	16,294.838	0.00	0.08	474.39
593.00	0.09	0.346	16,787.000	0.00	0.09	501.96

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 100 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
593.05	0.09	0.365	16,870.865	0.00	0.09	530.01
593.10	0.09	0.384	16,954.939	0.00	0.09	558.21
593.15	0.10	0.404	17,039.221	0.00	0.10	586.54
593.20	0.10	0.423	17,123.713	0.00	0.10	615.01
593.25	0.10	0.443	17,208.414	0.00	0.10	643.62
593.30	0.10	0.463	17,293.323	0.00	0.10	672.37
593.35	0.10	0.483	17,378.442	0.00	0.10	701.27
593.40	0.11	0.503	17,463.770	0.00	0.11	730.31
593.45	0.11	0.523	17,549.306	0.00	0.11	759.49
593.50	0.11	0.543	17,635.052	0.00	0.11	788.81
593.55	0.11	0.563	17,721.006	0.00	0.11	818.27
593.60	0.12	0.584	17,807.170	0.00	0.12	847.88
593.65	0.12	0.604	17,893.542	0.00	0.12	877.63
593.70	0.12	0.625	17,980.123	0.00	0.12	907.53
593.75	0.12	0.646	18,066.914	0.00	0.12	937.57
593.80	0.12	0.666	18,153.913	0.00	0.12	967.76
593.85	0.12	0.687	18,241.121	0.00	0.12	998.09
593.90	0.12	0.708	18,328.539	0.00	0.12	1,028.56
593.95	0.12	0.729	18,416.165	0.00	0.12	1,059.18
594.00	0.13	0.751	18,504.000	0.00	0.13	1,089.95
594.05	0.13	0.772	18,590.772	0.00	0.13	1,120.87
594.10	0.13	0.793	18,677.746	0.00	0.13	1,151.92
594.15	0.13	0.815	18,764.924	0.00	0.13	1,183.13
594.20	0.13	0.836	18,852.305	0.00	0.13	1,214.48
594.25	0.13	0.858	18,939.888	0.00	0.13	1,245.97
594.30	0.13	0.880	19,027.675	0.00	0.13	1,277.61
594.35	0.14	0.902	19,115.665	0.00	0.14	1,309.40
594.40	0.14	0.924	19,203.857	0.00	0.14	1,341.33
594.45	0.14	0.946	19,292.253	0.00	0.14	1,373.42
594.50	0.14	0.968	19,380.851	0.00	0.14	1,405.65
594.55	0.14	0.990	19,469.653	0.00	0.14	1,438.02
594.60	0.14	1.013	19,558.657	0.00	0.14	1,470.54
594.65	0.14	1.035	19,647.865	0.00	0.14	1,503.22
594.70	0.14	1.058	19,737.275	0.00	0.14	1,536.04
594.75	0.14	1.080	19,826.888	0.00	0.14	1,569.01
594.80	0.14	1.103	19,916.705	0.00	0.14	1,602.13
594.85	0.15	1.126	20,006.724	0.00	0.15	1,635.40
594.90	0.15	1.149	20,096.946	0.00	0.15	1,668.82
594.95	0.78	1.172	20,187.372	0.00	0.78	1,703.03
595.00	1.94	1.196	20,278.000	0.00	1.94	1,737.91
595.05	3.44	1.219	20,367.719	0.00	3.44	1,773.28
595.10	5.21	1.242	20,457.635	0.00	5.21	1,809.07
595.15	7.22	1.266	20,547.750	0.00	7.22	1,845.25
595.20	9.44	1.289	20,638.063	0.00	9.44	1,881.79
595.25	11.86	1.313	20,728.574	0.00	11.86	1,918.69

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Post-Development 100 year 20 min
Label: Future Basin

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
595.30	14.46	1.337	20,819.282	0.00	14.46	1,955.91
595.35	17.23	1.361	20,910.189	0.00	17.23	1,993.45
595.40	20.15	1.385	21,001.294	0.00	20.15	2,031.30
595.45	23.21	1.409	21,092.597	0.00	23.21	2,069.44
595.50	26.39	1.434	21,184.098	0.00	26.39	2,107.85
595.55	28.87	1.458	21,275.797	0.00	28.87	2,145.71
595.60	28.95	1.482	21,367.694	0.00	28.95	2,181.33
595.65	29.04	1.507	21,459.789	0.00	29.04	2,217.10
595.70	29.12	1.532	21,552.082	0.00	29.12	2,253.03
595.75	29.21	1.556	21,644.574	0.00	29.21	2,289.11
595.80	29.29	1.581	21,737.263	0.00	29.29	2,325.35
595.85	29.37	1.606	21,830.150	0.00	29.37	2,361.74
595.90	29.46	1.631	21,923.235	0.00	29.46	2,398.28
595.95	29.54	1.657	22,016.519	0.00	29.54	2,434.98
596.00	29.62	1.682	22,110.000	0.00	29.62	2,471.84
596.05	29.71	1.707	22,202.727	0.00	29.71	2,508.85
596.10	29.79	1.733	22,295.648	0.00	29.79	2,546.01
596.15	29.87	1.759	22,388.763	0.00	29.87	2,583.33
596.20	29.95	1.784	22,482.072	0.00	29.95	2,620.80
596.25	30.03	1.810	22,575.575	0.00	30.03	2,658.43
596.30	30.11	1.836	22,669.272	0.00	30.11	2,696.21
596.35	30.19	1.862	22,763.163	0.00	30.19	2,734.15
596.40	30.26	1.888	22,857.248	0.00	30.26	2,772.25
596.45	30.34	1.915	22,951.527	0.00	30.34	2,810.50
596.50	30.42	1.941	23,046.000	0.00	30.42	2,848.91

Label: Future Basin (IN)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	594.90 ft
Volume (Initial)	1.149 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	22.53 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	20.58 ft³/s	Time to Peak (Flow, Outlet)	20.00 min

Elevation (Water Surface, Peak)	595.41 ft
Volume (Peak)	1.390 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	1.149 ac-ft
Volume (Total Inflow)	0.621 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.613 ac-ft
Volume (Retained)	1.156 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Label: Future Basin (IN)

Scenario: Post-Development 2 year 20 min

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	11.27 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.08 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	592.90 ft
Volume (Peak)	0.308 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.310 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.009 ac-ft
Volume (Retained)	0.301 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Scenario: Post-Development 15 year 20 min
Label: Future Basin (IN)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	16.73 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.10 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	593.29 ft
Volume (Peak)	0.458 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.461 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.012 ac-ft
Volume (Retained)	0.449 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Label: Future Basin (IN)

Scenario: Post-Development 25 year 20 min

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	19.64 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.11 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	593.49 ft
Volume (Peak)	0.538 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.541 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.013 ac-ft
Volume (Retained)	0.528 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Subsection: Level Pool Pond Routing Summary
Label: Future Basin (IN)

Scenario: Post-Development 100 year 20 min

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	591.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.06 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.06 ft³/s
Time Increment	1.00 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	22.53 ft³/s	Time to Peak (Flow, In)	5.00 min
Flow (Peak Outlet)	0.12 ft³/s	Time to Peak (Flow, Outlet)	25.00 min

Elevation (Water Surface, Peak)	593.68 ft
Volume (Peak)	0.618 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.621 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.013 ac-ft
Volume (Retained)	0.607 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Summary for Hydrograph Addition at 'Future Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Future Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Future Basin Inflow	0.621	5.00	22.53
Flow (In)	Future Basin	0.621	5.00	22.53

Summary for Hydrograph Addition at 'Future Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Future Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Future Basin Inflow	0.310	5.00	11.27
Flow (In)	Future Basin	0.310	5.00	11.27

Summary for Hydrograph Addition at 'Future Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Future Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Future Basin Inflow	0.461	5.00	16.73
Flow (In)	Future Basin	0.461	5.00	16.73

Summary for Hydrograph Addition at 'Future Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Future Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Future Basin Inflow	0.541	5.00	19.64
Flow (In)	Future Basin	0.541	5.00	19.64

Summary for Hydrograph Addition at 'Future Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Future Basin Inflow

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Future Basin Inflow	0.621	5.00	22.53
Flow (In)	Future Basin	0.621	5.00	22.53

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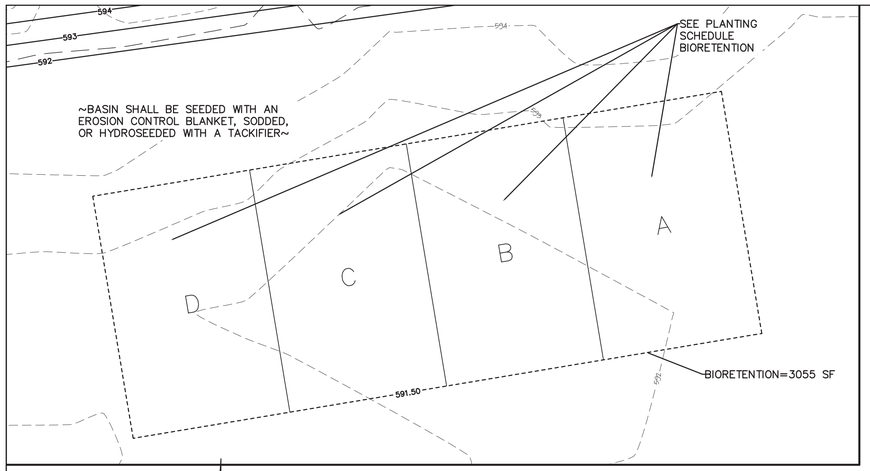
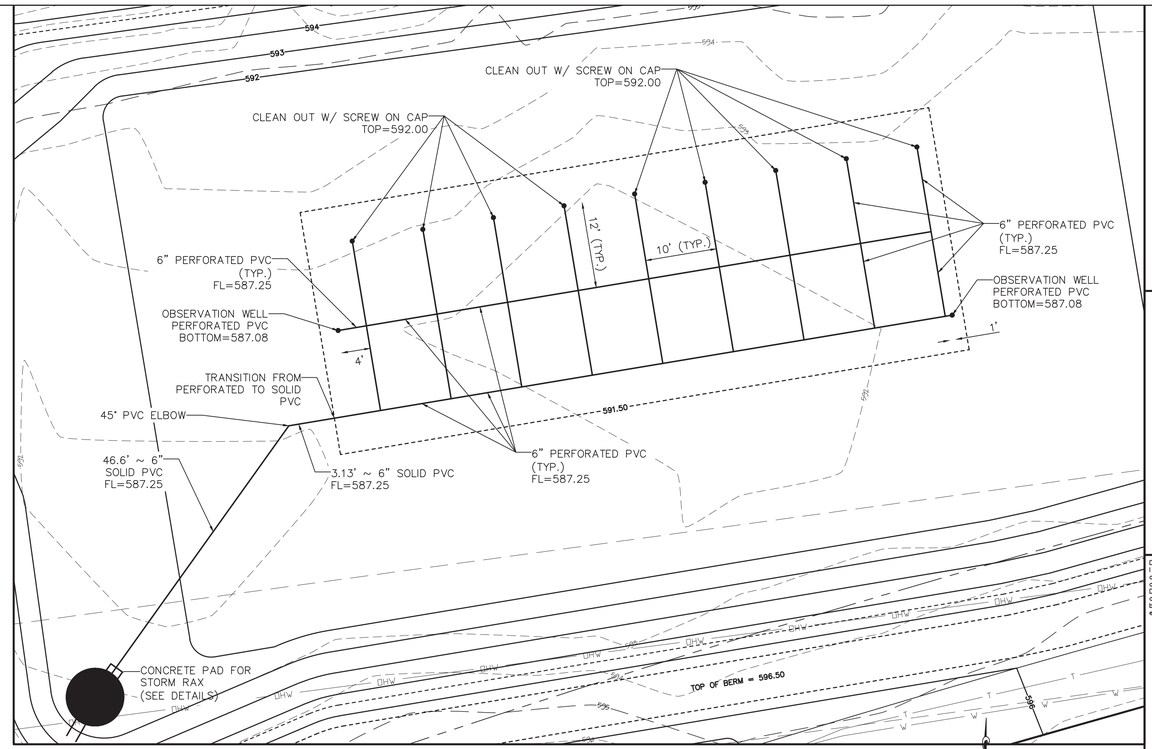
Appendix D

- Bioretention Basin Details
- BMP Details



GRAPHIC SCALE
10 0 5 10
(IN FEET)
1 inch = 10 ft.

BIORETENTION PLANTING PLAN



BIORETENTION UNDERDRAIN SITE PLAN

GRAPHIC SCALE
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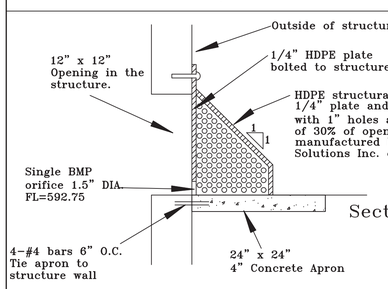
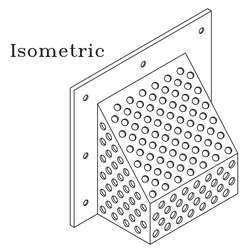
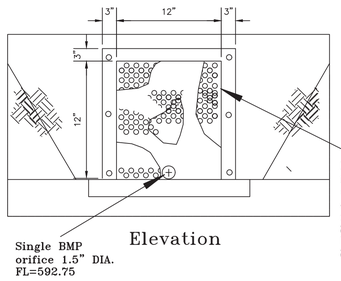
(IN FEET)
1 inch = 10 ft.







HDPE structural plastic 1/4" plate and grating with 1" holes and a min. of 30% of opening area manufactured by Plastic Solutions Inc., distributed by Contech Engineered Solutions or equal.

STORM RAX BMP DEBRIS CAGE OS 2A DRY/BIORETENTION DETENTION BASIN A1

N.T.S.

*BIORETENTION AREA CAN NOT BE STARTED UNTIL THE UPSTREAM AREA IS SUBSTANTIALLY VEGETATED

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Planting Soil Specifications:

PARAMETER	VALUE
pH Range	5.2 to 8.0
Organic Matter	1.5 to 5.0%
Magnesium	35 lbs. per acre minimum
Phosphorus (P_2O_5)	75 lbs. per acre minimum
Potassium (K_2O)	85 lbs. per acre minimum
Soluble Salts	≤ 500 PPM

Sandy Loam or Loamy Sand (should contain a minimum of 60 percent sand, by volume). The clay content for these soils should be less than 10 percent by volume. The soils shall be free of stones, stumps, roots, or other woody material over 1 inch in diameter. Brush or seeds from noxious weeds should not be present in the soil. Placement of the planting soil should be in lifts of 12 to 18 inches and be loosely compacted. (Rubber-Wheeled Heavy Equipment and mechanical tamping devices are not recommended for compaction).

SAND SPECIFICATIONS:

Washed ASTM C33 Fine Aggregate Concrete Sand is utilized for stormwater management applications. In addition to the ASTM C-33 specification, sand must meet ALL of the Following conditions:

1. Sand must meet gradation requirements for ASTM C-33 Fine Aggregate Concrete Sand. AASHTO M-6 gradation is also applicable. (Known as Natural washed concrete sand)

2. Sand must be silicabased...no limestone based products may be used. If the material is white or gray in color it is probably not acceptable.

3. Sand must be clean. Natural, unwashed sand deposits may not be used. Likewise, sand that has been contaminated by improper storage or installation practices will be rejected.

4. Manufactured sand or stone dust is not acceptable under any circumstances.

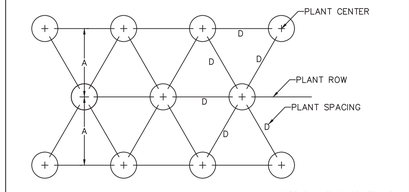
Sand Gradations per ASTM C-33 Sieve Specifications	Percent Passing
9.5-mm (3/8-in.)	100
4.75-mm (No. 4)	95 to 100
2.36-mm (No. 8)	80 to 100
1.18-mm (No. 16)	50 to 85
600-um (No. 30)	25 to 60
300-um (No. 50)	5 to 30
150-um (No. 100)	0 to 10

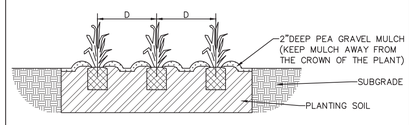
ITEM	LATIN NAME	COMMON NAME	TOTAL NUMBER	SPACING
A	Carex grayi	Bur sedge	35	60"
B	Carex vulpinoidea	Fox sedge	35	60"
C	Ratibida pinnata	Yellow/Grey coneflower	35	60"
D	Carex praegracilis	Tollway sedge	35	60"

NOTE: PROPOSED PLUG SIZE SHOULD BE 4.5" X 5" (QUART) OR LARGER.

PLANTING SCHEDULE BIORETENTION BASIN

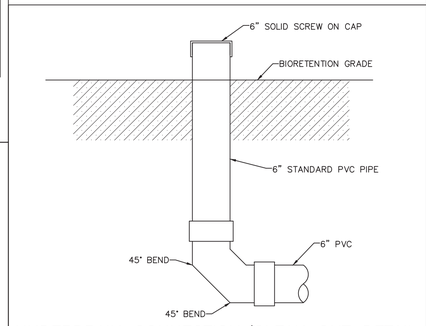
PLANT SPACING 'D'	ROW SPACING 'A'	NUMBER OF PLANTS/SQFT
60"	52.0"	0.045
30"	26.0"	0.160
24"	20.8"	0.25
18"	15.6"	0.45
15"	13.0"	0.64
12"	10.4"	1.00
10"	8.66"	1.44
8"	6.93"	2.25





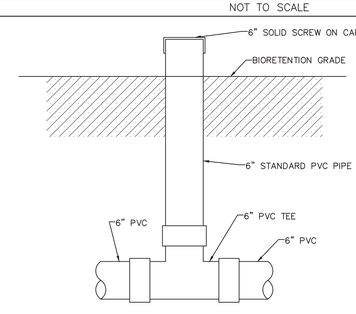
PLANT SPACING GUIDE

NOT TO SCALE



UNDERDRAIN CONNECTION/CLEAN OUT DETAIL

NOT TO SCALE



UNDERDRAIN CONNECTION/ CLEAN OUT DETAIL

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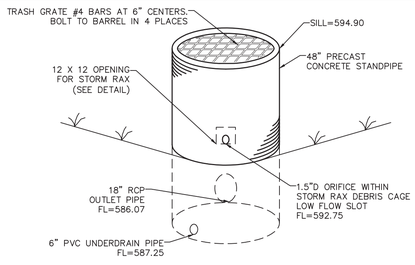
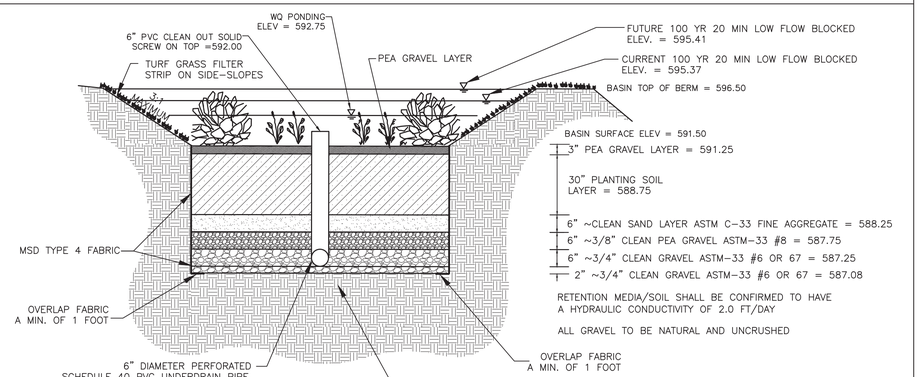


BASIN OVERFLOW STRUCTURE 100 DETAIL

NOT TO SCALE

CURRENT CONDITIONS
2 YR 20 MINUTE HIGHWATER = 592.80
15 YR 20 MINUTE HIGHWATER =593.15
25 YR 20 MINUTE HIGHWATER = 593.33
100 YR 20 MINUTE HIGHWATER = 593.51
100 YR 20 MINUTE (LFB) HIGHWATER = 595.37

FUTURE CONDITIONS
2 YR 20 MINUTE HIGHWATER = 592.90
15 YR 20 MINUTE HIGHWATER =593.29
25 YR 20 MINUTE HIGHWATER = 593.49
100 YR 20 MINUTE HIGHWATER = 593.68
100 YR 20 MINUTE (LFB) HIGHWATER = 595.41



BIORETENTION BASIN CROSS-SECTION

NOT TO SCALE

ENGINEERS SEAL DOES NOT APPLY TO DETAILS ON THIS SHEET

PROJECT TITLE:
CHILDREN'S LIGHTHOUSE
CHILDCARE CENTER
2570 SOMMERS ROAD
O'FALLON, MISSOURI 63368

Bax Project # 03-12478E Issue Date: 9/21/2023

ENGINEERING
PLANNING
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221 Point West Blvd.
St. Charles, MO 63301
636-928-5552
FAX 928-1718

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CLIFFORD L. HEITMANN
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E29817

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DETENTION AND WATER QUALITY DETAILS

P+Z No. # 23-004744
Approval Date: July 6, 2023
City No. #

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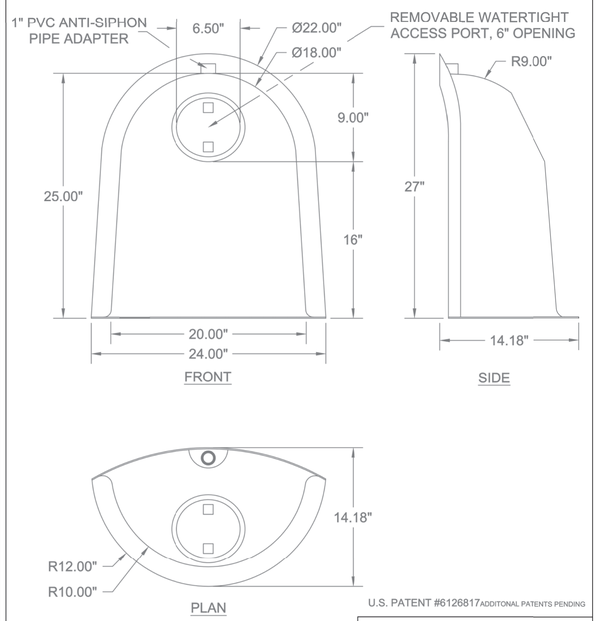
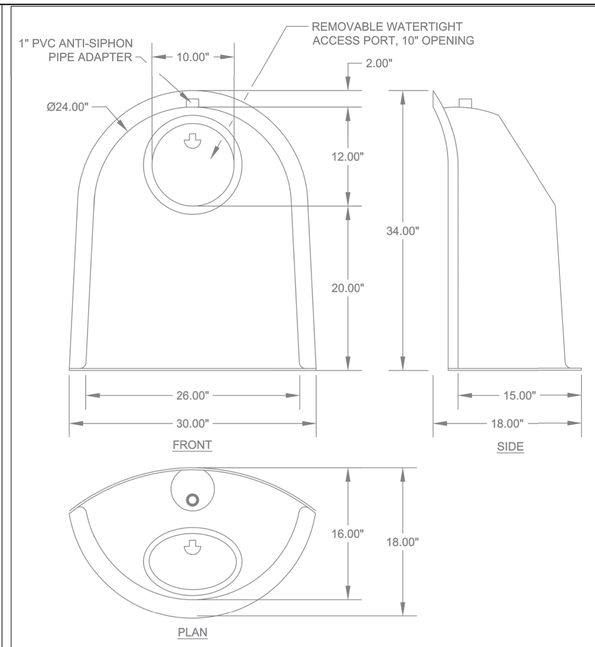


DESIGNED TO FIT 48"-60" DIAM. STRUCTURES

U.S. PATENT #6126817 ADDITONAL PATENTS PENDING

BMP, INC.
53 MT. ARCHER ROAD, LYME, CT. 06371
(800) 504-8008 FAX: (860)434-3195

DESCRIPTION	DATE	SCALE
18R SNOUT OIL & DEBRIS STOP	09/06/99	NONE
	DRAWING NUMBER 18R	



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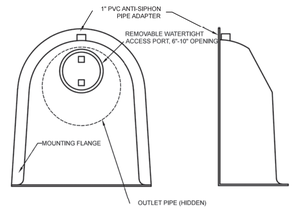
U.S.PATENT #6126817 ADDITIONAL PATENTS PENDING

BMP, INC.
53 MT. ARCHER ROAD, LYME, CT. 06371
(800) 504-8008 FAX: (860)434-3195

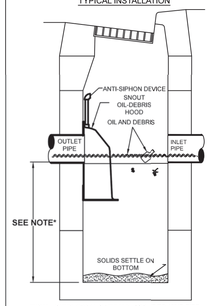
DESCRIPTION	DATE	SCALE
24R SNOUT OIL & DEBRIS STOP	09/13/99	NONE
	DRAWING NUMBER 24R	

CONFIGURATION DETAIL



SNOUT OIL-WATER-DEBRIS SEPARATOR

TYPICAL INSTALLATION



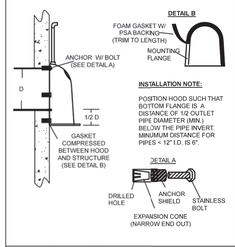
*NOTE- SUMP DEPTH OF 36" MIN. FOR UP TO 12" ID PIPE. OUTLET FOR PIPES 15" ID AND ABOVE SUMP DEPTH OF 2.5 TO 3 TIMES PIPE ID RECOMMENDED (E.G. 5' DEEP for 24" PIPE)

NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:
   BEST MANAGEMENT PRODUCTS, INC.
   9 MATHEWS DRIVE, UNIT A1-A2.
   EAST HADDAM, CT 06423
   TOLL FREE: (800) 504-8008 OR (888) 434-0277, FAX: (877) 434-3197
   WEB SITE: www.bmpinc.com
   OR PRE-APPROVED EQUAL
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT PIPE AND ELBOW AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION (SNOUT SIZE ALWAYS LARGER THAN PIPE SIZE).
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A MINIMUM DISTANCE EQUAL TO 1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 12" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL AND PIPE SHALL BE FINISHED FLUSH TO WALL.
8. ALL STRUCTURE JOINTS SHALL BE WATERTIGHT.
9. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH ⅜" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL)
10. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
    INSTALLATION KIT SHALL INCLUDE:
    A. INSTALLATION INSTRUCTIONS
    B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    D. 3/8" STAINLESS STEEL BOLTS
    E. ANCHOR SHIELDS

US Patent # 6126817, 7951294, 7857966, 8512556
Canada Patent # 2285146, 2690156, 2690156 others pending

INSTALLATION DETAIL

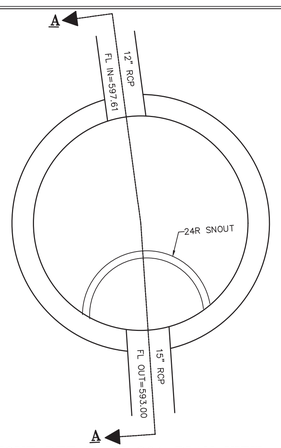


INSTALLATION NOTE:

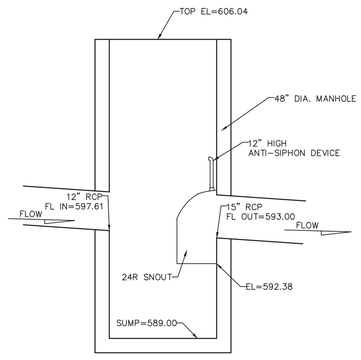
POSITION HOOD SUCH THAT BOTTOM FLANGE IS A DISTANCE OF 1/2 OUTLET PIPE DIAMETER (MIN.) BELOW THE PIPE INVERT. MINIMUM DISTANCE FOR PIPES < 12" I.D. IS 6".

HOOD SPECIFICATION FOR CATCH BASINS AND WATER QUALITY STRUCTURES

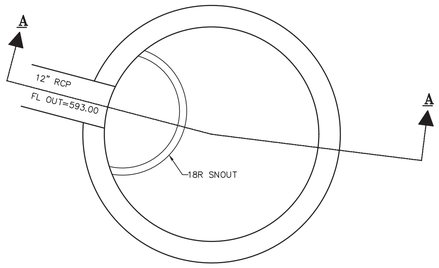
DESCRIPTION	DATE	SCALE
OIL- DEBRIS HOOD SPECIFICATION AND INSTALLATION (TYPICAL)	09/08/18	NONE
	DRAWING NUMBER SP-SN	



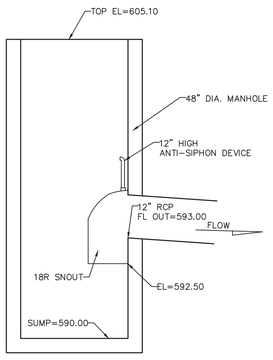
SNOUT DETAIL GI 301 PLAN VIEW
NOT TO SCALE



SNOUT DETAIL CI 301 PROFILE VIEW: A-A
NOT TO SCALE



SNOUT DETAIL CI 201 PLAN VIEW
NOT TO SCALE



SNOUT DETAIL CI 201 PROFILE VIEW: A-A
NOT TO SCALE

PROJECT TITLE:
CHILDREN'S LIGHTHOUSE
CHILDCARE CENTER
2558 SOMMERS ROAD
O'FALLON, MISSOURI 63367

Bax Project # 03-12478E Issue Date: 9/21/2023

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Appendix E

- Predeveloped Drainage Area Map
- CURRENT Postdeveloped Drainage Area Map
- CURRENT Basin Inflow Drainage Area Map
- FUTURE Postdeveloped Drainage Area Map
- FUTURE Basin Inflow Drainage Area Map

THIS SHEET FOR DRAINAGE PURPOSES ONLY, NOT TO BE USED FOR CONSTRUCTION.

EXHIBIT A
PREDEVELOPED DRAINAGE MAP
CHILDREN'S LIGHTHOUSE CHILDCARE CENTER
03-12478E

GRAPHIC SCALE
50 0 25 50
(IN FEET)
1 inch = 50 ft.

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Civil Engineer
2005000982
2023

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EXHIBIT B
POSTDEVELOPED DRAINAGE MAP
CHILDREN'S LIGHTHOUSE CHILDCARE CENTER
03-12478E

GRAPHIC SCALE
50 0 25 50
(IN FEET)
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OAKHURST (50'W PUBLIC) DRIVE

OAKHURST (50'W PUBLIC) CIRCLE

MAELIN DRIVE (50'W.)

RANTLIN DRIVE (50'W.)

THOMLIN COURT (50'W.)

SOMMERS ROAD (VARIABLE WIDTH)

MISSOURI STATE HIGHWAY DD (80'W)

OUTLOT A
OAKHURST PLAT ONE
P.B.47 PGS.369-372
PROPERTY N/F
HIGHWAY DD INVESTMENT GROUP, LLC
5978/2080
AREA = 4.972 ACRES

CURRENT POSTDEVELOPED DRAINAGE AREA I
LAND USE | ACRE | P.I.
GREENSPACE | 2.90 | 1.70
ONSITE BUILDING/PAVEMENT | 1.42 | 3.54
ONSITE BASIN SURFACE | 0.53 | 3.54
15 YR 20 MIN Q = 11.84 CFS

CURRENT POSTDEVELOPED DRAINAGE AREA II
LAND USE | ACRE | P.I.
GREENSPACE | 0.14 | 1.70
ONSITE 15 YR 20 MIN Q = 0.24 CFS

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EXHIBIT C
BASIN INFLOW DRAINAGE MAP
CHILDREN'S LIGHTHOUSE CHILDCARE CENTER
03-12478E

GRAPHIC SCALE
50 0 25 50
(IN FEET)
1 inch = 50 ft.

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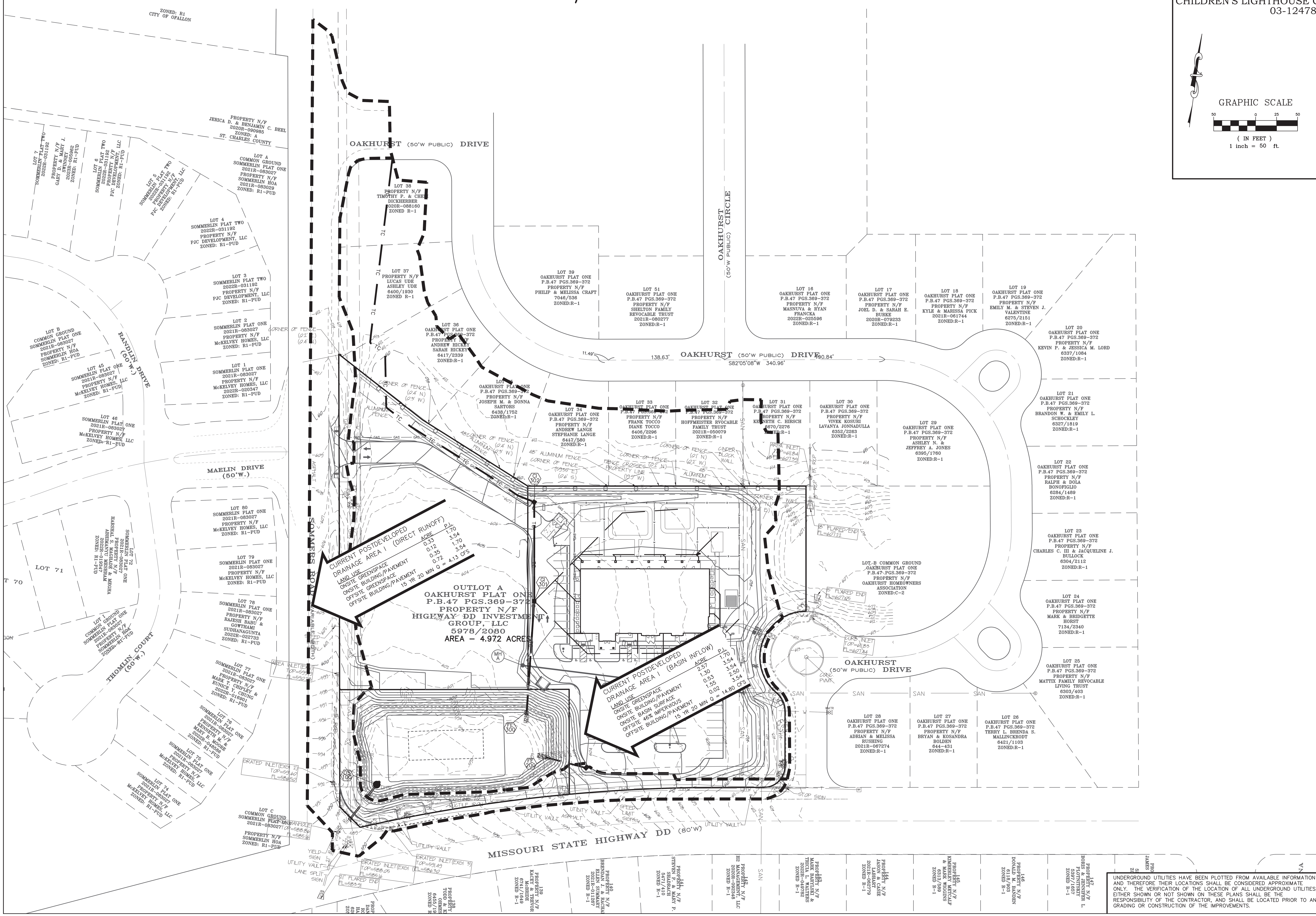

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EXHIBIT D
FUTURE POSTDEVELOPED DRAINAGE MAP
CHILDREN'S LIGHTHOUSE CHILDCARE CENTER
03-12478E

GRAPHIC SCALE
50 0 25 50
(IN FEET)
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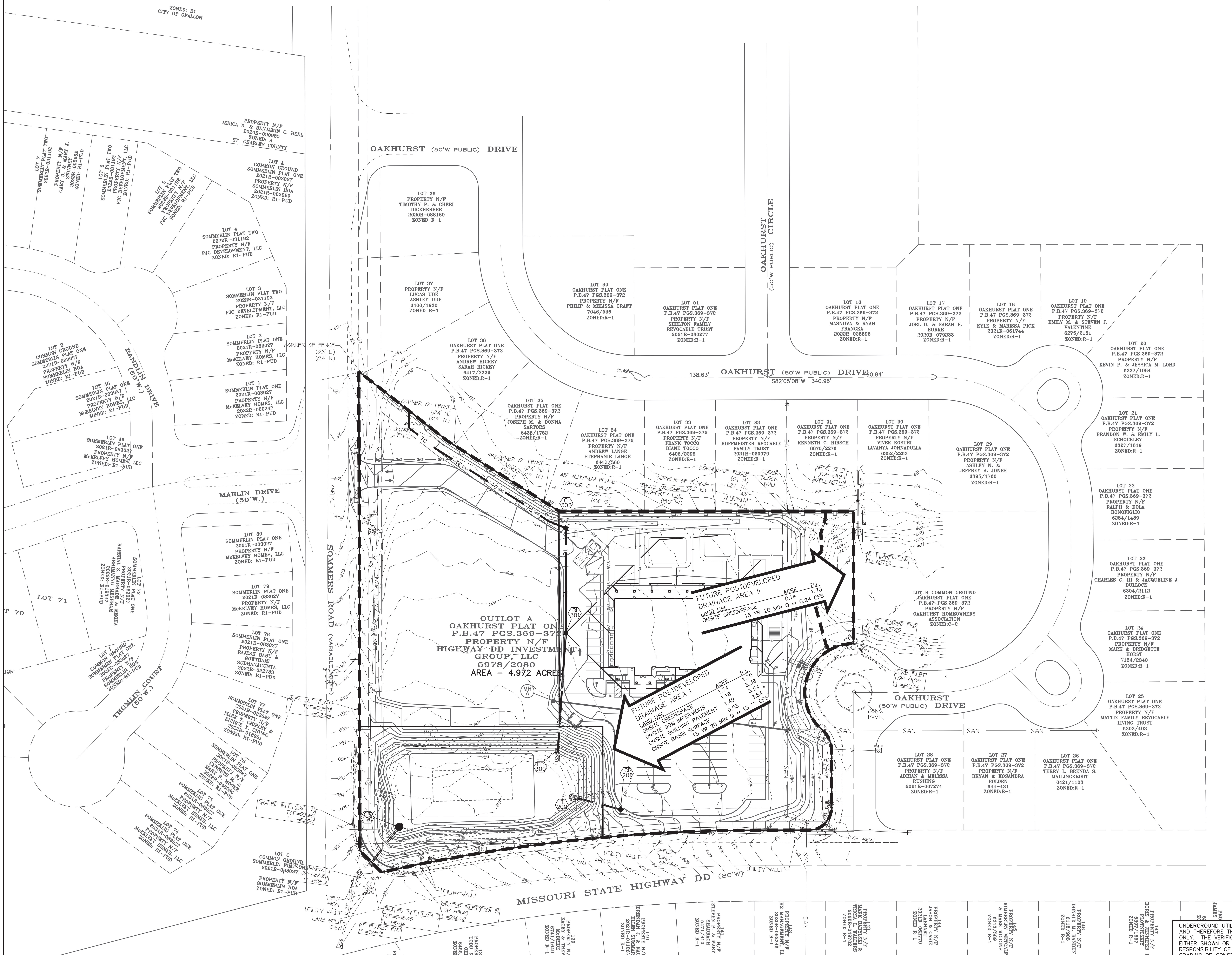

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EXHIBIT E
FUTURE BASIN INFLOW DRAINAGE MAP
CHILDREN'S LIGHTHOUSE CHILDCARE CENTER
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GRAPHIC SCALE
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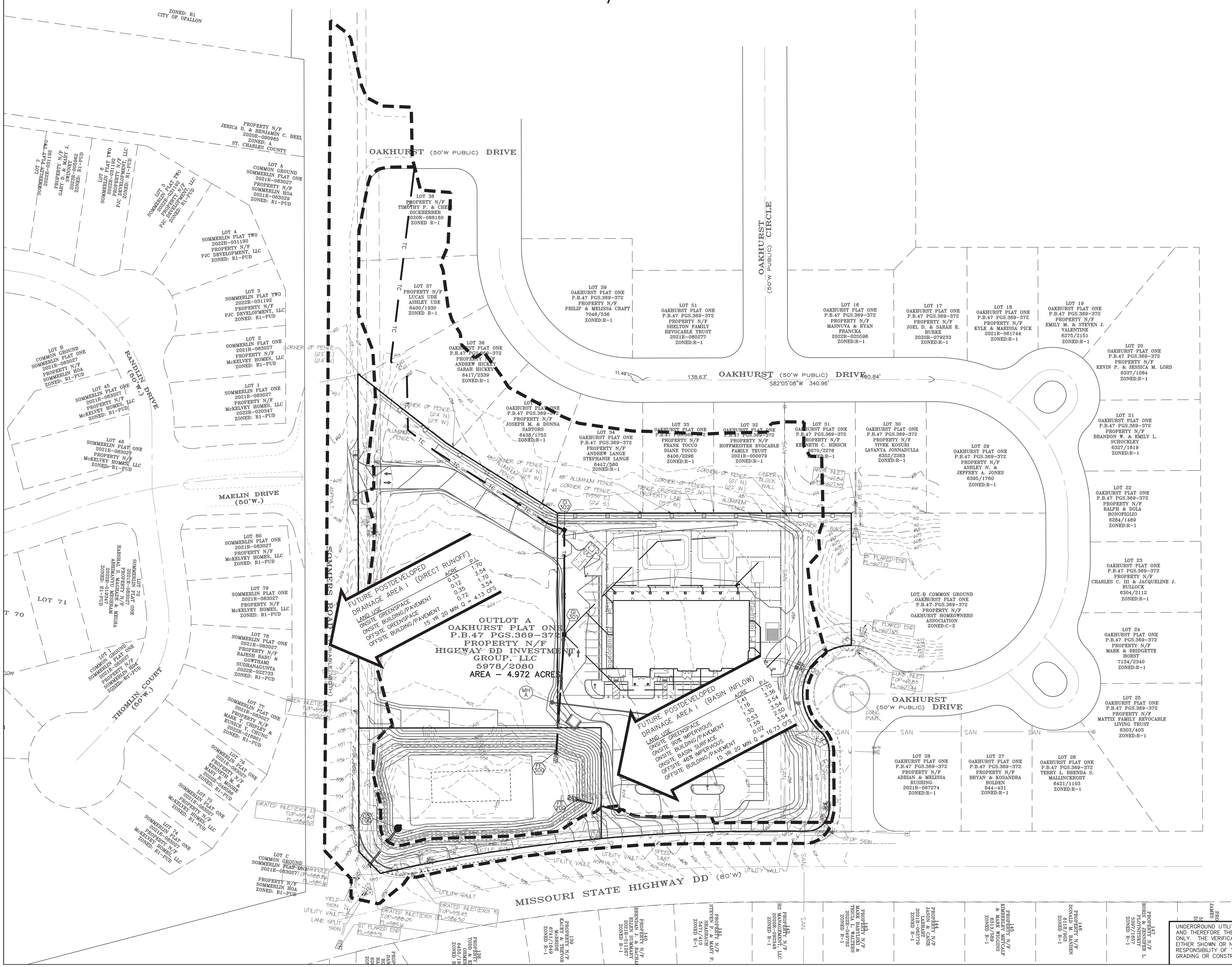

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